MEDICAL REPOSITORY,

FOR

MAY, JUNE, AND JULY, 1811.

Considerations on MENTAL *or* INTELLECTUAL PROPERTY, *with suggestions for its greater security: In a letter from the Hon.* ROBERT R. LIVINGSTON, *dated Clermont, December* 22, 1810.

DEAR SIR,

I FIND, by the minutes of congress, that you have taken up the patent law. I am very glad that it has fallen under your particular consideration; because, as it now stands it is not only nugatory, but unconstitutional, if the courts do not (as I suppose they will) restrain the words to the sense expressed in the constitution. This supposes, and very justly, that every man has exactly the same right in his invention as in the works of his hand or his money; that is, to use it exclusively, subject to no controul but that of the laws; and empowers congress to "*secure* to him *the* right to his invention:" the power of congress then only goes so far as to prevent an intrusion upon a natural right. The law, however, instead of confining itself to the words of the constitution, gives a right to use, vend, &c.: whereas, their whole power extends only to *secure* a natural right from *intrusion*, and to pronounce upon the penalty that the intruders shall incur. This has led many to suppose that congress can give a greater right in an invention than nature had given, or than a man enjoys in any other property, and empower him to *use* it within the jurisdiction of a state, in defiance of its laws. Such a construction is not only unwarranted by the constitution, but pregnant with serious evils; because, a patent may be very useful in one state and very mischievous in another, where circumstances are different. A book explaining to

slaves their natural rights, and exhorting them to exert them, would be innocent in Connecticut and dangerous in Carolina. It would be absurd to say that the latter state should have no power to prevent the sale of such a book, because the writer had a patent, or that a mountebank might sell his patent poisons, in defiance of all the state laws, for regulating physicians or the sale of drugs. No such power is given to congress to intrude an invention upon a state against their will; nor do I believe any was intended to be assumed by the law: but to avoid misconstruction, the very words of the constitution should be pursued; the law should recognize the natural right; declare the mode in which the invention should be proved; direct such a record of it as might be useful when the patent expired, and punish the intruders upon the patent. The present penalty is nugatory, because the patentee may have sold no right when his patent is broken in upon; and may even be prevented from selling by such intrusion on his rights. Besides this, a sale in one district may afford no rule for damages incurred in another. The only true penalty is forfeiture, and an easy remedy for the recovery of such forfeiture, such as by distress and sale: for now it is very doubtful where a forfeiture is incurred, by what species of action it is to be recovered: and in the case of a very useful and lucrative invention, unless the courts can give a summary remedy, by injunction or seizure, an intruder may, by the proceeds of his misdeed, make a considerable profit before the cause can be determined. There is one clause that might have been foisted into the law, to serve some individual interest, because it is not founded either on the constitution or natural justice; that is, the one which compels a man who had obtained a state right, previous to the forming of the constitution, to relinquish it when he takes a patent. From what do congress, who are only empowered to *secure* a natural right, derive a right to impose terms that may be injurious to the inventor? The state right may be more extensive than that which congress may give. What justice is there in compelling a man to relinquish what is his own, in order to secure what the constitution supposes to be his own also?

There is a doubt, whether the suit must be brought exclusively in the district court, or whether in this, as in all other private cases, the state courts have not a concurrent jurisdic-

tion? I see no reason for altering the common rule in this case.

When a machine is very expensive, so as to take time to make it, the term of fourteen years is much too short: there should be a power to double the term in such cases. Two terms of fourteen years were granted to Watt & Boulton, and I believe to others, in England. A great impediment to useful inventions, is the practice of abortive projectors, who have perhaps half conceived an idea, made an imperfect model, and given up the project, till some man of talents, who proceeds upon principles, perfects the machine. Then, all those who had before failed, come forward on the credit of their past blunders, and violate his rights. The law should declare that no one should be reputed the inventor of any useful machine, but the person that had applied it to some useful purpose, or could prove his first invention, and his continued prosecution of it, without his having relinquished it for the space of more than nine months. In England, indeed, the courts suffer no such dormant claims to come forward, as you will see in the case of Dollond, on the subject of Acromatic Glasses. How our courts would determine, I do not know; but it is best that the law should leave as little to the discretion of courts as possible, but be so plain that he who runs may read.

You will pardon, my dear sir, the liberty I take in these suggestions; but I wish, after so many abortive attempts, that a law may now pass that shall require no amendments, and leave as little room for misconstruction as possible; and I know no one to whom we can look with better hopes for such a law than to you, now you have turned your attention to it. I need not mention the interest I have, both as a citizen and as a projector, in the success of your endeavours.

I submit the following addition to the bill, to your consideration:

Be it further enacted, &c. That in any suit for the violation of a patent right, the defendant shall or may plead, or give in evidence, that a prior patent had existed for the same invention, or that the same had been effectually used and employed within the United States, or some foreign country, previous to the patent's having been taken, or the invention claimed by the plaintiff: Provided, nevertheless, that no dormant claims to the invention of any useful machine or material, or any part thereof, or to any new application of

such machine or material, shall be pleaded or given in evidence in support of a plea to invalidate a patent, except by the inventor himself, or some person to whom he had sold his invention, previous to the taking out of the plaintiff's patent. And provided also, That the defendant prove to the satisfaction of the court, that the inventor, or the person holding under him, had not abandoned the project, but had been engaged in perfecting the same, so as to render it useful to the public, within one year from, and prior to the date of the plaintiff's patent.

I am, with great esteem,
Dear Sir,
Your friend and humble servant,
ROB. R. LIVINGSTON.

REFLECTIONS ON THE PATENT LAWS.

To the Honourable the SENATORS *and* REPRESENTATIVES *in Congress,*

THE SUBSCRIBERS RESPECTFULLY SHEW,

THAT experience has proved the term of fourteen years to be too short, in this country, for patents to secure to inventors and improvers of the arts, the exclusive rights to their inventions.

Many valuable discoveries have been kept a secret many years; many patents have been obtained for valuable discoveries which have never been put in operation; many specifications of valuable discoveries are filed or prepared to be filed, and no patents applied for; the inventors waiting until greater encouragement be offered, or until they be better able to bear the expense of putting their discoveries in operation; so that if the object of granting so short a term be, that the public may the sooner get possession of the discoveries, it evidently produces a contrary effect, operating to deprive the public of the benefit for a far greater length of time, and in many instances, the invention is lost. Long time has established the principle of renewing patents for a second term in England: this has its good effect. A patentee can in some degree rely on it, and take his measures and obtain assistance accordingly: not so in this country.

But how much better would certainty operate? Why not

insure to the inventor at first, the privilege of renewing his patent for four terms of seven or ten years each, and by one act, save all the expense and time of the renewals by special acts of congress, and make the speculation of putting in operation new improvements a profitable one; enabling the inventor to obtain the assistance of monied men, and interesting him to travel, when necessary, to put his improvements to use, and to spread the knowledge thereof over the United States, to put the people in possession of the benefits?

Why not encourage effectually at once, by securing to inventors the right to renew their patents at the end of every seven or ten years, as long as their improvements will bear the expense of paying double fees at each renewal, beginning with $30 for the first, $60 for the second, $120 for the third, $240 for the fourth, $480 for the fifth, $960 for the sixth, $1920 for the seventh, $3840 for the eighth, $7680 for the ninth, $15360 for the tenth term; making for the whole ten terms $30690, and making all licences granted good for the term specified therein?

Would an inventor injure his country by making a discovery that would enable him to pay that sum into the treasury? we presume not; for we cannot suppose that he would pay in advance, to renew his patent, more than one tenth part of what he might hope to receive in premiums, in case all could be collected; then his patent must yield to him in seventy years, $30690. Neither can we suppose that any inventor will ever receive in premiums, more than the interest of the principal sum that his improvement is worth, to those who purchase his licence to use it; then, $30690 divided by 60, quotes $5115 thousand, or five millions, one hundred and fifteen thousand dollars; the sum his invention must be worth to his country, to enable him to hold by renewals, his patent for ten terms.

Viewing the subject in this true light, it appears evident that the labour of some men's minds might be made worth one hundred thousand times as much to their country; yet they are obliged, by the deficiencies of the laws, to suppress and bury their talents, and turn to labour with their hands, and keep secret from their fellow men the improvements they make on their business, until they can acquire property to subsist on; principles which they despise from the bottom of their hearts.

Consider also, that every species of animal and vegetable life propagates just in proportion to the ease with which it can find subsistence: so also with the human species. And the ease with which we can find plenty of subsistence, is just in proportion to the state of improvements of the useful arts, (agriculture being the most useful of arts), it results as a consequence, that the want of wholesome laws for encouraging the improvements of the useful arts, has in all countries and ages prevented millions of human beings from existing. To cause this country to improve and flourish beyond all others, in the arts, power and wealth, administer perfect justice to inventors, and their value in society being discovered, they will enrich themselves, by first enriching their country.

With submission and due respect,
Gentlemen, we are your most obedient
Humble servants,
OLIVER EVANS,
GEORGE CLYMER.

January 3, 1811.

Opinion of BENJAMIN COLVIN, *of Baltimore.*

BALTIMORE, 1st Feb. 1811.

SIR,

PERCEIVING by the papers, a resolution has been brought forward by you to amend the patent law, I take the liberty, as patentee of the mud machine, which is in use here, and at New-York, and several other places in the Union, where it has been of great public service, to observe to you, that my patent will soon expire, and that I shall be obliged to petition congress for a renewal, unless there is some provision introduced into the law, authorizing a renewal where the patent has been proved to be of public utility. For, like most other patentees in the United States, I have received no remuneration for my patent, though now it is about to expire. Its utility is becoming well known; which circumstance, to a gentleman of your liberal sentiments, will, I am persuaded, apologize for the freedom I have taken in thus addressing you.

A few years past, Mr. Oliver Evans, on behalf of the patentees in the United States, addressed a petition to con-

gress on this subject ; and although the committee to whom the petition was referred were favourable, the session ended before any steps were taken upon it : that petition is, I believe, on record, and I presume it might possibly throw some light on the situation of patentees, which has induced me to mention it.

I further beg leave to observe to you, that professional men are very much divided in opinion as to the construction of the last clause in the act of 1802, inflicting the penalty for invading a patent right. The act inflicts three times the actual damage sustained by the patentee. The former law inflicted three times the price the patent had usually sold for, which the act of 1802 repealed. I respectfully suggest, whether, as the law is now to be amended, this ambiguity had not better be remedied, by stating, that the penalty should be three times the price, and such additional damage as it might appear had been sustained by the *use* of the patent. You will, I am sure, pardon this digression, when I inform you, that three eminent legal men were all of different opinions on this head.

I am respectfully, Sir,
Your most obedient servant,
BENJAMIN COLVIN.

Hon. Dr. Mitchill.

JOSEPH HAWKINS'S *Opinion.*

BALTIMORE, Dec. 24, 1810.

Mr. Mitchill,

RESPECTED SIR,

I HAVE, through the medium of the newspapers, become acquainted with your active views to secure to scientific characters their inventions and discoveries, that ultimately may be an advantage to the community ; and as I have suffered extremely, from the looseness of the laws of the United States, I have thought proper to transmit to you my grievances, wherein the laws are defective, in securing the right to the individual. 1st. Those who are disposed to make use of the discoveries of the patentee, have it in their power to employ the invention of the author in secret, so as to realize all the contemplated benefits that have been guaranteed by govern-

ment to the inventor, and he is precluded by the present law from obtaining any knowledge of the infringement on his rights. I deem it but just, that any proprietor who suspects the infringement of others, ought to be entitled to free egress and ingress, in the presence of witnesses, so as to ascertain the fact. 2dly. It is to be lamented, that there are characters amongst us, who, in defiance of the law, will use your guaranteed right of the government, and subject themselves to a prosecution, which is so tardy in the law, that four or five years may elapse before a final decision takes place, and whatever damages may be recovered, the defaulter has it in his power at last, to pay you off with a ticket, and assume the business the next day, knowing that the same course of law will again be continued, without leaving any possible chance of reparation for the inventor, who is already become burdened with all the expenses of the prosecutions: and unless a special provision be made by government to prevent those intrusions, there is no security in patent rights. 3dly. I deem it extremely improper for any of the clerks in the department of state, who has the charge of the patent office, to be privileged to take out a patent; as it gives them the power to secure to himself preemption rights, as all specifications of discoveries pass through his hands, and he may claim them as being his own; which was the case with myself respecting ——————————, who received my specification, and acknowledged the receipt of my money, and that all my papers were correct, and that he would send me the patent as soon as the duties of the office would admit of it: but after possessing my papers about nine months, he wrote me, that I had a competitor, and it only remained for me to state to him the date of my discoveries, and he should then know which of the two to grant the patent to; whereupon I set out for Washington, and remained there three days, when that gentleman artfully obtained an arbitration, before he let me know that it was himself who was my competitor; in which he acted in the most unjust manner, and I was defeated in obtaining my right, until the following year, which I then obtained through the friendly interposition of Mr. Smith, secretary of state. I have not advanced one single idea with regard to this matter, but what I have documents to establish, on the basis of facts, as well as many others, which I will not at present trouble you with a recapitulation of.

What makes me particularly anxious for the protection of the law is, in consequence of having already one of my patents infringed on, in almost every capital city in the United States, and having another patent that I fear will undergo the same fate, if not better protected: this is, for liquidating turpentine, by a chemical process, so as to be able to use it in lieu of oil, in all light-houses, as well as cities.

With due respect I am,

Your humble servant,

JOSEPH HAWKINS.

Mr. FULTON'S *Sentiments.*

SIR,

BELIEVING that every friend to our national interest will feel the importance of giving a reasonable protection *to the property of mind*, and thereby stimulate our ingenious citizens to exertions, which, adding to our valuable improvements, will give dignity to our national character as an enlightened people; it is hoped, the new bill for a patent law will meet your friendly support. For the amendment of which, the following three clauses are respectfully submitted to your consideration. The first to come in section 8, line 15th, after the words "*jurisdiction thereof.*"

And when, by a decision of the court on this law, a verdict shall be given for the plaintiff, the marshal of the district, in which the patented thing, which has been the object of the suit, is established, practised or used, shall immediately take possession of it, nor shall it be practised or used, until permission in writing be first obtained of the patentee, or his assignee.

This clause is necessary, otherwise the violator of a patent might pay the estimated damages, which are always difficult to ascertain, and continue to use the invention; whereas the true meaning of the law is, to give the inventor of an original and useful thing, an entire command over it. Should it be of a kind to require general use, it cannot be the interest of the inventor to charge a high price, which only a few persons could afford to pay. He must make it the interest of the public to use his invention, by putting on it such a price as every one can afford to give. Thus, his own interest guards the public against imposition.

Second. To prevent delays, *which, as the law now stands,* the violators of patent rights may interpose to prolong a suit, which in some instances has been for six or more years, during which time they may use the invention to the great injury of the patentee; there should be a clause authorizing the judge to grant an injunction, to stay the defendant from using the thing patented, until the cause were decided. This would urge the defendant to a speedy decision. It might perhaps be as follows, to come in between the 8th and 9th sections:

And be it further enacted by the authority aforesaid, That when a suit shall be brought by a patentee or his assignee, against any person or persons violating his or their rights, it shall be lawful for the court, or any judge thereof, in vacation, to injoin the defendant from proceeding to use the thing patented, until a decision of the suit, or a further order of the court; which injunction shall be granted as in other suits, on a bill filed in equity.

The decision on both these cases being left to the judge, who will always form his opinion on respectable evidence, and the plaintiff also being liable to heavy damages, will compel him to be very certain that his patent is violated, before he commences a suit. Such a clause, while it guards the public and the patentee, will discourage fraud, and promote prompt justice.

Section 6th should be a clear definition of new and old inventions.—The following is submitted to your consideration as an improvement on that section.

And be it further enacted, That simply transposing the component parts, or changing the form of any *specific* combination of machinery, or composition of matter, and for the same purpose for which it is already in public practice and use, shall not be deemed a discovery or invention: nor shall transposing the component parts, or changing, in any degree, the form or proportions of a patent machine, or composition of matter, be admitted as an improvement, or pretext to evade a patent.

Section 12th, line 5th, to come in after the words "*useful arts*"—

Shall have the benefit of this law, in as full and ample a manner as if the same had been in force when such patent was granted.

By the English law, a patentee must put his invention into such practice, so as to be of public utility within three years after obtaining his patent, or it becomes void. This is to prevent indolent inventors, who render no service to the public, from occupying principles which might be improved and rendered valuable in the hands of active inventors, or to prevent dormant ideas being brought forward in suits at law to injure the useful inventor, who may have accomplished the object in view, without any knowledge of the dormant and unproductive thoughts of others.

The 24th section has been very judiciously introduced as a substitute for the English clause alluded to.

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DEAR SIR,

I AM happy to hear your project of patent law is printing. If you get it through this session, the gentlemen from the western waters shall have a steam-boat on the Ohio, and one on the Mississippi next year: and I believe the patentees must make you a statue, as a friend to the arts, and a citizen who deserves well of his country.

I beg leave to submit to your consideration a clause of importance for the bill now depending. In England, if a person does not establish the object of his patent within three years after obtaining it, it becomes void, and all its parts are free for other artists to use. This is right; for it is only the active inventors who establish their inventions in practice, that are of public utility. With us, there are many half-conceived, abandoned, or abortive inventions *patented*, dormant, and useless: yet if a man produces a machine of utility which borders on any of those inventions, or useless projects, he awakens the whole host of sleepers, and soon finds himself involved in disputes and law-suits. Such evils should be guarded against, by the clause I submit to you; which clause will also compel inventors to be active to perfect their machines, and render them of public utility. A case of this kind was decided by Lord Mansfield. *Dollond* had commenced the Lenses of the Acromatic Telescope, but did not perfect or bring it into use. Fifteen years after, the same thought occurred to *Ramsden;* he worked at it, brought it into use, it became profitable to him, and Dollond attempted to evade or break his patent. His Lordship de-

cided that the dormant invention was of no use to the public, and the active genius was, and hence entitled to protection. Ramsden's patent was declared *good.*

I am, with great respect,
Your most obedient,
ROBT. FULTON.

Saml. L. Mitchill, Esq.
Washington, Jan. 21st, 1811.

Communication from OLIVER EVANS.

MARS WORKS, PHILADELPHIA, Jan. 11, 1811.

HONOURABLE SIR,

I AM engaged in planning and constructing a steam-mill, that shall saw 5000 feet of boards in the day, and grind 220 bushels grain in the night. It may be set any where in the woods, where the timber grows, or on navigable waters, where timber and grain can conveniently be brought. The fuel will not cost more than cutting, the slabs will be sufficient. The cost of the engine half of an English one.

This improvement has been kept from the public twenty-five years, for want of ability to defray the expense, which a patent term of twenty-eight years for my improvements on manufacturing flour, *granted at first*, would have given me.

I began to make steam-engines, without a dollar of profit, to get them into use, one of which has been clearing for its owner $ 100 *per day*, for three and a half years.

A short patent term deprives the people of the use of improvements for a long time; prevents them from receiving the principal sum, to save them from paying the interest for license to the inventor. No inventor can ever think of charging more than the interest of the principal the improvement will save to the user. My highest charge is not more than one third the interest of the real profits.

Inventors are kept poor and despised; rendered unable to benefit their country, although justly entitled to be rich and respected, and able to render their country eminent services, all which would be the effect of a long patent term.

I have invented a machine to be wrought by one of my

steam-engines, and I am ready and willing to make it for any person who may want it, and will pay the expense. It would raise from under water from 5 to 10,000 tons of mud, and convey it from 20 to 100 yards, in twelve hours;* it would apply to banking meadows, draining and raising lands, digging and cleaning out canals for boat navigation, cleaning docks and raising wharfs, or removing sand bars. It would cost from $6 to 10,000.

But no man will be found in America to risk the expense; and unless I receive from my other improvements money to spare for the purpose, it may lay as long as the Marquis of Worcester's discovery of steam, before another will take it, viz. 150 years. It is his principle which I have revived, and put into useful operation before I ever heard of him.

Sir, your obedient humble servant,
OLIVER EVANS.

The honourable Dr. Mitchill, Chairman of the Committee to whom is referred the Bill for the promotion of the useful arts.

Amount of Monies received for Letters Patent.

Amount received in the year	1801 ——	1,410
Do.	1802 ——	2,100
Do.	1803 ——	2,910
Do.	1804 ——	2,670
Do.	1805 ——	1,710
Do.	1806 ——	2,190
Do.	1807 ——	2,850
Do.	1808 ——	4,860
Do.	1809 ——	6,690
		27,390

Treasury of the United States,
January 5, 1810.

TH. T. TUCKER,
Treasurer of the United States.

* 9,000 tons mud, would raise seven acres, one foot.

Concerning some HUMAN BONES *of an extraordinary size, dug from a great depth, near Girgenti, (the ancient Agrigentum) in Sicily: In a letter from Capt.* JAMES ALLEN *to* JOSEPH BACKUS, *Esq. of Bridgeport, dated*

BRIDGEPORT, Dec. 21, 1808.

IN compliance with your request, and in answer to your different inquiries, be pleased to accept the following statement.

In the spring of the year 1807, I was master of the ship Jupiter, of Philadelphia, on a voyage up the Mediterranean, and in the month of May in that year, lay a considerable time in the port of Girgenti, in the island of Sicily; situated on the southern side of the island, about twenty leagues south-east of Palermo, and about thirty leagues south-west from Mount Ætna. While lying there, I was informed that some human skeletons, of vast size, had been then lately dug from the ground, about three miles from Girgenti. My curiosity led me to visit the spot from whence they were taken, and to examine and measure the bones. On arriving at the place, I was shown two skeletons, the one much broken, the other entire, except a small piece of one of the leg bones being wanting. The bones of the entire skeleton were promiscuously laid in a box, but measured when laid in a natural position, eleven feet four inches, Italian measure, in length; ten of which inches equal nine English, or very nearly; making the skeleton about ten feet and a half, English. I measured one of the thigh bones, which was twenty-six Italian inches long, and of a proportionate size—its diameter, as near as I could judge, being about four inches, English. The head, including the skull and jaws, were about the dimensions of a common two gallon pail or bucket, and the rest of the bones were in suitable proportions to those described: the whole being a human skeleton, or the entire bones of a man, as above described, of a gigantic size, certainly of a height when living, of not less than ten English feet, and probably several inches higher, by reason of the cartilages between the joints, muscles and skin, on the top of the head and the soles of the feet.

The discovery of the bones was made, as I learned from

the inhabitants, about a year before I was there. Some of the neighbouring people having pitched upon the place from whence they were dug (a vale by the side of a mountain) for the purpose of digging sulphur, (an employment common in that island) opened the ground, and by degrees descended to the depth of one hundred and seventy feet, when they came to a marble wall, erected by art, and ornamented with hieroglyphical representations. While attempting to remove a part of it, the wall fell, when within was discovered a hollow place, in which were the bones described, and which appeared to have been enclosed in marble coffins or cases, also adorned with hieroglyphics. The parts of the supposed cases were so broken by the falling of the wall, that their proper shape and design was not ascertained. One of the skeletons was also much broken at the same time; the other was however entire, as before stated. The falling of the wall so deranged the parts of the vault, that it could not be determined whether it was in fact a sepulchre, or some other building; nor was it ascertained whether those were skeletons deposited here by design, or were those of persons killed by the sinking of a city, and buried in its ruins at the time of some awful catastrophe—but that at some period of the world the place where the bones were found had been the site of some opulent city, adorned with the arts, and which had, by some great convulsion of nature, been sunk and overwhelmed by the sea, there can be no doubt: the marble blocks and slabs taken from the wall, part of which had not been removed, all engraved in the most curious manner, with various devices, and which I carefully viewed, having descended into the aperture to its bottom for that purpose, satisfied me of the fact. Besides, the earth through which the workmen had descended was all made earth, appearing to be composed of sea-mud filled with oyster, scollop and other sea shells, of uncommon size. There was, however, no tradition among the inhabitants, as I could learn, of such a city, or of any such great convulsion as must have destroyed it. The people were still labouring at the depth mentioned.

Thus, sir, have I complied with your request, as far as my recollection will at this time enable me to do it. I am willing to make oath to the truth of my statement, when convenient for you to attend for that purpose.

Remarks on the statement, by Mr. Backus.

AMONGST the many who near the time of the end, according to the prophet Daniel, should run to and fro, and by whom knowledge should be increased, Capt. JAMES ALLEN, of this borough, appears to be one. He has lately returned to his family and friends, after an absence of about two and an half years, traversing different seas, and visiting different countries. At the port of Girgenti, in the island of Sicily, in the Mediterranean, he spent considerable time. Among many things gratifying to the curious to hear, he lately described to me some enormous human skeletons seen by him on that island. The relation was so extraordinary, that I requested of him that his statement might be committed to writing, and that he would make oath to its truth; to which he very politely assented. I was not induced to this by any doubt in my mind of the truth of the facts, as all who are acquainted with Captain Allen, will as readily give credit to his naked certificate of facts within his own knowledge, as to the affidavit of any person whatever. But as I thought the statement worthy of publication, strangers might, by the solemnity of the mode, give more attention to it.

Captain Allen's relation must furnish the naturalist with much additional evidence of the changes which have taken place in the world since its creation, and give an enlarged scope to his philosophical researches. The scholar will be pleased to learn, that on classic ground there are now indubitable evidences that the fables of the Titans and Cyclops, had for their foundation a race of giants, who while existing, must have been the terror of all mankind of modern size, and by the heathen, naturally, have been believed superior in their nature. The Christian, whose faith is founded on the divine authority of the Bible, must feel peculiar pleasure when new and important evidence of the truth of scripture history is discovered. Mallet, in his *Northern Antiquities, and Russic Mythology*, drew from the darkness of ancient Scandinavian languages, the Icelandic Edda, containing the religion of Odin. The readers of that little volume, translated by Mallet, readily discover many facts and doctrines (though enveloped in fable) so analogous to some in the bible, that the knowledge of them must have been derived from the same source—a revelation to the Patriarchs

at a period anterior to the dispersion of mankind after the general deluge. Sir William Jones, in his Asiatic Researches, has produced from the mythology of the Hindoos, incontrovertible evidence of many of the permanent articles of scripture history, peculiarly subject to deistical cavilling and derision. Barrow, in the account he gives of his travels in the province of the Cape of Good Hope, furnishes satisfactory proofs that the Unicorn was once an inhabitant of Africa. Captain Allen's statement proves beyond a doubt, that a race of men once inhabited our earth, as large as Goliath or the sons of Anak.

After the above remarks, I make no apology for offering to you for publication the annexed statement.

JOSEPH BACKUS.

A Description of the YELLOW SPRING *in Virginia, by the Right Reverend* JAMES MADISON, D. D. *in a letter to Mr.* RITCHIE, *of Richmond, dated May 20th,* 1811.

AS every observation, which tends in any degree, to enlarge our views of the natural history of a country, is not unworthy of attention, I take the liberty of forwarding to you a few experiments and observations upon one of the mineral springs of this state. I know that this sketch forms only a small portion of those researches to which the naturalist devotes himself: but, we must begin; we must consider every faithful narrative of facts as essential to the structure of that grand temple of science, which can be reared only by a particular knowledge of all those valuable materials, with which nature may have enriched any portion of the globe. Its various natural productions, however necessary for the accommodation of man; whatever sources of wealth they might open to industry; whatever extension they might give to the most useful arts; or, whatever blessings its medicinal waters may be capable of diffusing; must be submitted to philosophical investigation, before their proffered advantages can be enjoyed. Hence it should form one among the first objects of a newly created society, to know well the rich gifts with which nature has favoured it, and to what arts native materials particularly invite its citizens. But, it is to be lamented, though nature has lavished

her bounties upon Virginia, not only in fertility and variety of soil, but in minerals, vegetables, and the innumerable medicinal waters, which rise amidst her vast chains of mountains, that the study of her natural history has so few votaries among us. We cannot, indeed, expect that any one should justly appreciate a science of which he is ignorant; but were judicious efforts made to excite a taste for natural history by proper institutions, we should not long want a Humboldt, and a Bonpland, who would bring to light the riches with which this state abounds, and which require only to be known, in order to be rendered subservient to the most useful purposes.

The following analysis, though wanting that accuracy, which time, and a possession of the necessary re-agents might have afforded, will serve at least, to communicate some idea of the nature and efficacy of the water; and may also excite others more skilful, and better prepared, to attempt a more complete investigation of its constituent parts.

This Spring is denominated "Taylor's Spring," or, "The Yellow Spring." It rises in Montgomery County, on the east side of the Alleghany mountain, and about a quarter of a mile from its summit. The water forms one of the tributary streams of the north fork of the Roanoke, which is not more than two miles distant. The situation of the Spring may be readily traced upon the late map of Virginia, as it lies between Christiansburg and Blacksburg, being nearly six miles from the former, and about three from the latter. The roads which lead to it from the east, are among the best in the state; the climate is exceeded by no other in point of salubrity; and, the accommodations, in every respect, are comfortable and agreeable.

Limestone prevails generally in this country, except upon the top of the mountains; and, it is worthy of remark, that as this species of stone is seldom, if ever, seen on the top of high mountains in Europe, according to the observation of the celebrated Kirwan, in his Geology, so, the same fact appears to occur in America.—The earth, near the Spring, is strongly impregnated with sulphur. Rain water passing through a bank of this earth, thrown up from a cellar, becomes highly sulphureous.

The temperature of the Spring is between 54 and 55 of Farenheit's Thermometer.—Its transparency attracts the at-

tention of every one.—Its taste is somewhat astringent, or styptic, not unlike the first impression of ink upon the tongue; or, a weak solution of the sulphat of iron, generally known by the name of green vitriol. The taste of sulphur, or the hepatic taste and smell is scarcely, if at all perceptible; and so far from being unpleasant, the water is often drank by healthy, laborious persons, in preference to common limestone water.

In running along wooden channels, the water deposits a brownish yellow sediment. The same kind of ochreous sediment is seen at the bottom of the Spring, and particularly, on the sides of the vessel through which it rises. A *blue* sediment is also observed on some parts of the same vessel, which is, probably, prussiate of iron. See Chaptal, Chap. 10.—Concerning iron. Article 5th.

Upon standing twelve or fifteen hours in an open vessel, the water loses, in a great measure, its peculiar taste, becomes flat, and deposits a very small quantity of a brownish sediment. If used as soon as it begins to boil, it is preferred in cookery; but, if the boiling be continued, it renders whatever is mixed with it bitter and disagreeable.

I.

Experiments made, principally at the Spring.

1. The weight of the water, tried hydrostatically, with a pair of scales, which turned readily with the 4th of a grain, appeared not to differ from that of the common limestone water, both being nearly of the same temperature.

2. Silver is not changed in colour, by pouring the water upon it, or by a continuance for some time in the channel through which the water flows. There appears to be no sulphurated hydrogen in the water, from this experiment,

3. An infusion of tea, or any vegetable astringent, strikes a brownish purple colour.—The same effect is produced when the water has stood in an open vessel for twenty-four hours; and when *boiled*, the colour is much deeper.—This experiment shews, that the water contains not only the oxyd of iron, but, that it is combined with sulphuric acid; and not the carbonic.

4. Blue flowers strike a lively green, when the water is fresh, when it has stood thirty-six hours in an open vessel, and when it has been boiled, the presence of an akaline substance is hereby indicated. But, it is probable that the green colour is produced by the lime contained in the water,

especially as the same result takes place in any strong lime-stone water; when the same test is applied.

5. The water is quickly curdled by soap—Salt of tartar turns it milky—Ley immediately turns it milky; large flocks are formed, and a considerable precipitate ensues, of a greenish colour—All the results here mentioned take place after ebullition and are more strongly marked than before; and hence justify the conclusion, that the precipitate had been in combination with a fixed, rather than a volatile acid.

6. Upon mixing lime water with that of the Spring, nearly in equal quantities, a milkiness ensues, and a whitish precipitate takes place.

7. Air, collected from the water by boiling, precipitated lime in lime water; shewing that the water does contain a carbonic acid. But the quantity of air collected from a quart of water was very small. No bubbles of air rise in the spring.

8. Sulphuric acid, dropped into the water, produced a slight effervescence, and disengaged some air, which was, no doubt, the carbonic acid.

9. Lunar caustic produced no change in the colour of the water, shewing that it contained no marine salt.

10. Thirty-two oz. Av. of the water, boiled to dryness, yielded twenty-three grains of a whitish sediment. Small chrystallized spiculæ are seen shooting from every part; shining particles, of the appearance of mica, are abundant; the taste of the sediment is somewhat saline and bitterish. These chrystals appear to be those of selenite; whilst the taste indicates the presence of epsom salt.

11. The dried sediment agitated in lime water, takes from it a peculiar taste; and thus affords a proof, that the sediment contains either carbonate, or sulphate of magnesia; for those acids, the carbonic and sulphuric having a stronger affinity for lime than magnesia, will desert the latter to unite with the former, and thus constitute a compound, either insoluble or difficultly soluble in water. But when it is recollected, that it may well be doubted whether nature ever exhibits that combination, the carbonate of magnesia; and also, when this experiment is compared with others, it appears to be sulphate of magnesia, which is here indicated.

12. The dried sediment, with the addition of a little charcoal, exposed to a strong heat, in a crucible, becomes pungent and highly sulphureous. The oxygen of the sulphuric acid is thus separated, and a union of lime and sulphur is left.

13. The dried sediment, agitated in rain water, is partly dissolved, and strikes a deep green with blue flowers.

14. The ochreous sediment is soluble in alcohol, and hence is shewn to be the oxy-sulphate of iron.

15. Upon ten grains of the sediment, obtained by boiling, an oz. of alcohol, was poured, and frequently agitated; after standing twelve or fifteen hours, the whole was carefully filtered; the filter being accurately weighed before it was used. The sediment was found to have lost two grains nearly; the alcohol, from being colourless, assumed a light brown.

16. Upon ten grains of the sediment, previously washed in alcohol, and well dried, about six oz. water, which had been boiled and cooled, were poured and frequently agitated. After standing twenty-four hours, a whitish precipitate of nearly seven grains was obtained. To the water, which had been carefully poured off, carbonate of potash was added, which turned the water milky, and gave a very white, loose precipitate, of nearly three grains. Upon each of the precipitates thus obtained, a small portion of sulphuric acid was dropped; with the first, little or no effervescence ensued. It appeared to be sulphate of lime. With the latter, the effervescence was brisk, a chrystallized salt was formed, deliquescent, and somewhat bitterish.

From this and the preceding experiment, it may be inferred, that a given quantity of the sediment will contain two parts of the oxy-sulphate of iron, seven of the sulphate of lime, and three of the sulphate of magnesia. The water contains also carbonic acid, but not in excess, as it does not communicate, in any sensible degree, a subacid taste.

This spring resembles, in many respects, the celebrated water of Pyrmont, according to the experiments and observations of Hoffman; but the carbonic acid is not in the same excess; it exists here only in a state of combination. The sediment also differs in quantity; this water affording a 685th part of its weight; the other a 576th, though this more probably contains a greater proportion of the oxyd of iron, and of the sulphuric acid in combination.

II.

The obvious effects of this water upon drinking it, are, 1st, a sensible flushing of the face; or rather a pleasant warm glow is felt, attended with an increase of pulsation. In persons, whose pulse may generally rate 72 in a minute, it will soon rise to 86 or 90, after drinking a few tumblers of the water. In one instance, which fell under my own observation, the pulse of a person in good health rose to an 100, after drinking freely of the water, but without the least feverish heat.

2d. It is strongly diuretic; is light upon the stomach, and instead of causing uneasiness, or depression of spirits, though drank in considerable quantity, gives hilarity.

3d. It is gently purgative. Seven or eight tumblers of the water, each containing about half a pint, produce this effect upon most constitutions.

4th. It excites appetite, and promotes digestion. If it does not act as an aperient, which may occur with those who do not drink it freely, especially before breakfast, headach sometimes ensues, in consequence of excess of food in which many indulge themselves; but this effect is easily removed either by temperance in eating, or by the aid of cream of tartar, &c.

III.

The cases in which this water has been found to produce the most beneficial effects, are,

1st. In sores and ulcers, which have long baffled all medical aid. Cures, in many instances, have been effected by this water in a manner so speedy, and so complete, and that in cases of the most desperate kind, when amputation appeared to be the only resort, as might well excite a suspicion of the narrator's veracity, were not the facts established by evidence the most unquestionable. Thus, ulcers upon the legs, of many years continuance, and in one instance, of nineteen, have been perfectly healed by a few days washing, and drinking of the water. Nor has the water failed to effect an entire cure, in any instance, according to that testimony which may be relied upon, after its external and internal use for fifteen or twenty days. Humanity requires that this efficacious and benignant quality of the water should be widely known.

2d. In all cutaneous disorders; and in inflammation of

the eyes, whether of recent, or of an old date, the water produces the happiest effect.

3d. It removes obstructions of the viscera. It has been known to cure perfectly a person who laboured under an enlargement of the spleen, after medical skill had exhausted its powers.

4th. It is most serviceable in bilious complaints: and in all cases of debility, acts as a powerful restorative.

It is not pretended to enumerate all the cases in which the salutary effect of this water may be expected. I resign that pleasing task to the scientific physician. It certainly, however, deserves to be ranked among the most valuable waters, with which this state so eminently abounds. The proof of its salubrious effects depends not upon conjecture, or vague, or interested reports; but, upon facts, which have fallen under the observation of men as distinguished for their veracity, as for all those other qualities, which constitute respectability of character.

Dissection of a body, dead of SPOTTED FEVER, *with pathological and practical remarks: In a letter to the editors, from* JOSEPHUS B. STUART, *M. D. dated Albany, April 2.*

PERMIT me to offer you the following case for publication in your very valuable Repository. The fatal ravages which the disease commonly called the Spotted Fever (and of which I consider the following a striking example) has made in many parts of our country, renders it the duty of all who feel interested for the promotion of medical science, or the cause of humanity, to do all in their power to investigate its nature, and guard against its too fatal termination. Believing that the facts brought to light by the following dissection might be of some service to those who may have to combat this formidable disease, I have thought it my duty to lay the case before the public.

A native of New-Haven, which he left six weeks since, aged 22 years, of a robust, muscular habit, complained at 11 o'clock, A. M. the 28th of March, of an oppression (or load) at his stomach. At 12, however, having a good appetite, he ate a hearty dinner, and continued apparently as well as usual, the slight oppression abovementioned, excepted,

until 6 o'clock, P. M. when he had a severe chill, which was succeeded by a sickness at stomach, and great oppression at the scorbulus cordis. At 10, he puked his dinner, and was shortly after seized with violent pain in the head, back, and extremities. These symptoms continued much the same until 6, A. M. the 29th; at which time his extremities were cold, and several claret-coloured spots were discovered on them. At 8 o'clock, Dr. Elias Willard was desired to visit him, which he did. At 9 o'clock, he found his extremities cold, and the discolouration abovementioned, extended almost to the trunk; no pulse in either the radial, temporal, or facial arteries; his eyes suffused, countenance heavy, lips livid, tongue dry and of a brown colour, pain in the head, back, and extremities, sickness at stomach, and oppression much as they had been during the night; within the last hour, a troublesome diarrhœa, insatiable thirst, great anxiety and distress (which he was unable to describe) had come on, and rendered his situation really distressing and hopeless. Dr. W. prescribed an emetic: at 10 I saw him; he had taken within the last half hour 35 grains of ipecacuanha and 4 grains tart. antimony, but without producing any sensible effect whatever. All the symptoms were increasing rapidly; pulse in the carotid 38 in a minute and feeble: the faculties of the mind appeared to be unimpaired; the warm bath, strongly impregnated with common salt, was ordered, and afterwards friction over the whole body, with warm brandy, and to take a table spoonful of the volatile alkaline julep, with 10 gutt. of laudanum every hour, to be alternated with a strong decoction of the rad. serpentariæ. At 12, a consultation of nine physicians was called, at which time the symptoms were much the same as at 10. The claret-coloured spots had commenced on his ears and face. The above medicines were directed to be continued, with the addition of brandy. At 3 o'clock, P. M. he had lost his reason, eye-sight, and power of deglutition; respiration hurried and difficult. Since 1 o'clock, he had been very restless; pulse in the carotid 160 and feeble, extremities cold and stiff, heat of the trunk natural, discolouration becoming general, eyes much suffused, and eye-lids closed; instead of the bath, flannels wrung out of it, were applied to the body, and the friction with warm brandy, as directed. At a quarter before 6 o'clock, P. M. he expired. At 7 o'clock the extremities (which at 3, were stiff and cold,) were flexi-

ble, and to the touch, appeared to be several degrees above the natural heat of the body in health. Permission being obtained, I examined the body at 9, A. M. the 30th. The claret colour, on the surface, appeared to have been produced by a slight effusion of blood, into the cellular substance; the omentum was of a pink colour; the blood vessels of the mesentery, and the vena. portarum, were distended with blood; the spleen was about four times its usual size, but of a healthy colour and consistence. On cutting into it, a great quantity of grumous blood, of a very fœtid smell oozed out of it: the stomach was empty; the gall-bladder full of yellow bile. Nothing further was discovered in the abdomen, differing from a healthy state: the lungs were of a healthy appearance; the heart and large vessels connected with it, particularly the aorta, were distended with blood; the coronary vessels were as minutely injected as I have ever seen them in the best preparations. On removing the scull-cap, the dura mater adhered very firmly to it; the blood vessels of the dura mater and brain were distended with blood; on making an incision into any part of the brain, the cut surface was instantly covered with the blood which oozed from its vessels: the right lateral ventricule contained about a table-spoonful of serum.

This was unquestionably a genuine case of what has been termed in Connecticut, "*The Spotted Fever*," where I believe it has generally been considered as a disease of debility, and treated as such. This was the opinion entertained by a majority of the medical gentlemen, who saw the present case. But how debility should take place so suddenly, and to so great a degree, and yet the patient should recover almost as suddenly (which has been the case in a few instances,) was a mystery, which neither myself, nor any medical gentlemen with whom I had conversed on the subject were able to explain. With a view, if possible, to throw some light on the nature of this disease, I was induced to undertake the dissection above stated, and from what was discovered, I think myself warranted in making the following conclusion, viz: let the cause be what it may, I think the effect is to produce a torpor of the glands, lymphatic and sanguiferous vessels, situated in the extremities and surface of the body, which in violent cases is shortly followed by a total loss of action in these vessels. The effect of this is, to force all the blood from these parts into the large vessels, si-

tuated in the abdomen, thorax, and brain, producing in them a state, termed by the French writers, *Engorgement;* and constituting, what I think may be properly called, a disease of oppression, not of debility.

This opinion is supported by the early loss of the circulation and discolouration in the extremities, and by the slow and feeble action of the *heart,* which I took notice of when I first saw the patient (at 10). The heart was then oppressed, and almost overpowered, by the unusual quantity of blood constantly crowding upon it. If I am right in my conclusion, the method of cure is obvious, viz.: to restore the action of the vessels of the extremities and surface, and to increase the action of the heart and arteries, so as to restore the circulation to these parts. Will stimulants alone do this?—In mild cases they may possibly answer, but in those more violent, I think they cannot but increase the difficulty. What would be the effect in the first stage of the disease, of bleeding largely from the jugulars, (as it is often impracticable to do it in the extremities) to give immediate relief to the large vessels situated in the cavities, particularly those of the brain; and immediately afterwards, administer a large dose of calomel, and tart. antimony, or some other medicine which would operate promptly and powerfully as an emetic and cathartic, whereby the stomach and bowels would be thoroughly evacuated, and the action of the vessels of the whose system probably very much excited? at the same time put the patient into a warm bath, rendered very stimulating by the addition of *common salt, or spirit. terebinth. &c.* to which might be added friction. Should the remedies produce the desired effect, of restoring the circulation to the extremities and surface, and thereby relieve those of the cavities; we should probably find our patient almost as suddenly restored, as he was prostrated. I cannot but take notice of the impropriety, I conceive there is, of calling this disease (particularly in its most violent form) "*a Fever.*" In fact, there is a total absence of fever!

With sentiments of the highest respect and consideration, I have the honour to be, gentlemen, your very humble servant,

JOSEPHUS B. STUART.

PROPOSED INTERCOURSE *between the country adjacent to the Tennessee and Cumberland Rivers, and the Gulf of Mexico, by his Excellency* WILLIE BLOUNT: *in a letter to the Hon.* PLEASANT M. MILLER, *dated Knoxville, January* 30, 1811.

SIR,

MY letters of the 9th of February, and of the 22d December last, addressed to the delegation in congress from Tennessee, I hope have been received; they contain in substance the following information, respecting the much desired routes from this state to the Mobile; which, if we are permitted to have the unmolested use of, both by land and by water; and were indulged with the privilege of rendering those ways comfortable as to the necessary accommodation for travellers, which the the Indians are unable to afford, would be very acceptable to the people of Tennessee; and these routes would also be an accommodation to those who navigate the Ohio and Mississippi. We should then have a short and easy communication with the ocean, by which to carry our produce to market, and they could go from Orleans to Mobile by inland navigation, thence up the Tombigby until they would be very near the settled part of Tennessee, which would supersede the necessity of travelling several hundred miles on foot, as they are now obliged to do, through the Choctaw and Chickasaw nations, and of course be freed from the many hardships, insults, and injuries they are now subjected to, in many ways, and which they sustain in thousands of instances when travelling that road from market. Hence, to open such channels of communication, and to obtain such routes for our commerce and their convenience, are objects of great magnitude and solicitude with us and with them. The United States having now the possession of the Mobile country, and being entitled to exercise sovereignty over the intermediate space between this and that, the hope is indulged that the privilege will, without delay, be granted to us by the general government.

The bay of Mobile is from 8 to 12 miles wide, and joins the gulph of Mexico at Mobile Point, 100 miles E. N. E. from New-Orleans; 35 miles W. from Pensacola; 500 mile

N. N. W. from the Havanna—From Mobile Point to the city of Mobile is N. 30 or 35 miles—The bay reaches above the city a mile or two—the city of Mobile is on the west of the bay, situate on a fine dry bluff, at which the sea breeze is felt, and is very healthy—vessels drawing 7 feet water may lie along side the wharf at the city, and such as draw 11 feet water, by bearing off E. from the city, may ascend the Tombigby or Alabama 100 miles without experiencing the least difficulty—Vessels of 20 or 30 tons burthen may safely navigate the Alabama 300 miles, say up to the Coosa and Tallapoosa rivers, at their junction; those rivers form the Alabama. Coasting schooners of 30 or 40 tons burthen, pass from New-Orleans to Mobile Point, in 18 or 24 hours. From the junction of Coosa and Tallapoosa to the falls of Coosa, is 5 miles. The falls of Coosa have been carefully examined at high and low water; during the first, and a middling swell in the river, they may be passed with ease, and in low water, will bear no comparison with fifty falls in the Susquehannah, passed every month in the year—through the falls, the rock is universally a species of fibrous sand stone, generally soft enough to be cut with a pen-knife, and when harder may easily be broken to pieces. The ground on the W. side is well calculated as to soil and surface for a canal, and is perfectly level, without stones or rocks. From the falls in Coosa, to the Ten Island Ford on Coosa, it is called by water 175 miles, by land 100, in which distance there is no interruption to boating; in the dryest season of the year, the Ten Island Ford gives 30 inches water, the river here is half a mile wide, the bottom of the shoal is level, and extends about half a mile; from the Ten Island Ford on Coosa to the Hightower River is 50 miles—ascending Hightower, you enter the Estanaula, a deep stream 30 yards wide, and pass up it to Connasauga, say 30 miles; thence up Connasauga to head boatable point for barges of ten or fifteen tons; thence through a level valley, nine miles carrying place, to the head boatable point or Amoi River, which, in 15 miles empties into Hiwassee, thence down into the Tennessee. From the head of navigable water for boats of ten or fifteen tons down the Hiwassee and up Tennessee to S. W. Point, is 100 miles—from the navigable water in Amoi, for boats of ten or fifteen tons, to the Connasauga River, is nine miles carrying place, but I suppose it would be 30 or 40 miles to safe navigation in the latter, for boats of

that tonnage. This would do for one route from E. Tennessee. From the mouth of Hiwassee to the junction of Tennessee and Ohio, it is computed to be one third farther than from the first to Mobile, say nothing of the 1100 miles to Orleans from the junction of Tennessee and Ohio, and of the dangers of the Mississippi, or of the Tennessee Shoals. —The destruction occasioned on the Mississippi by storms, so frequent and extensive, does not happen on the Alabama, or on Coosa: their banks never fall in, and they afford safe harbours in every part; sawyers, sucks, and snags, are not found in them; their currents are much more gentle in any state of the water, a boat can ascend the Alabama and Tombigby 35 miles, with the same force and time required to ascend the Mississippi 25: so says one who has navigated all three.—These circumstances shew the propriety of the people of East Tennessee's preferring Mobile to New-Orleans, as a market; and purchasers may be counted on at each place in equal numbers, so soon as the communication shall have been opened. As to the expense of carriage or freight, without any allowance for a difference in the current of the rivers Alabama and Tombigby compared to Mississippi, two cents per pound from Mobile to the head boating on Coosa, would pay better than four cents (the present price) from Orleans to Nashville. The land carriage from Baltimore to Abington in Virginia, is 4 1-2 to 6 dollars per hundred—to Knoxville 6 to 8, from Philadelphia one dollar more, and to Cumberland from 9 to 10 dollars. This last statement exhibits part of the advantages to be gained by carrying groceries, hardware and heavy goods from Mobile to Tennessee. The heavy expenses at present on transportation, to wit: boats, which become useless, and a loss at Orleans, could be substituted by barges, which might be brought back from Mobile—Calculating the boats that pass down the Tennessee River annually, at only 50 dollars each, there is a yearly loss of labour to the state of Tennessee, of *ten thousand* dollars at least—from West Tennessee much greater.

Capt. Gaines says " from Turkey-town, on Coosa, about 120 miles above the junction of Coosa and Tallapoosa, across to the Tennessee River is not more than 45 miles, over an open champaign country, well calculated for a road." He does not state at what point on the Tennessee. On Bradley's map I observe a considerable creek of the

Tennessee, and another, a branch of the Coosa, approaching very near to each other. Watts' town is situate on the branch of Tennessee, and it is probable that Will's town is on the other—the Indians travel a path-way from Will's town to Turkey town, and I understand that the distance does not exceed 30 miles—this would afford a good carrying place for the people of East Tennessee, and for such of those of West Tennessee as reside above the Shoals.

Col. M'Clellan, who has explored the country between Fort St. Stephens, on the Tombigby, and South West Point, on Tennessee, computes the distance by land, from the former, to the Hickory Ground, or falls of Coosa, to be 100 miles; to Grayson's 45 miles; to the ten Islands, on Coosa, 60 miles; to Brown's, on Amoi, 80 miles; to Hiwassee 45, to South West Point 45; making in all, 345 miles from Fort St. Stephens to South West Point—deducting 30 miles for bends in the road, it must be nearer to pass from Turkey town across to the Tennessee, near to Watts' town, which is about 80 miles below Hiwassee garrison.

From South West Point, in this state, to Mobile Point, it does not exceed 445 miles by land, as tide water flows up the Alabama 145 miles, above Mobile Point, it does not exceed 300 miles from South West Point, to the tide water of Mobile. Grayson, who lives in the Creek nation, says "that in Braddock's war, he has seen three mast vessels at the junction of Coosa and Tallapoosa;" which is the head of Alabama River. I hope it will not be long before such will be seen there again, and that they will be owned by citizens of the United States, who may be engaged in carrying the produce of Tennessee to market. The foregoing information will afford you an idea of the distance from this to Mobile, and also give an idea how the routes from East Tennessee to Mobile should pass.

From Mobile city to Fort Stoddert, which is 4 miles below the junction of the Alabama and the Tombigby, is 40 miles; thence up the Tombigby to the Cotton-Gin Port, which is considered to be at the head of the navigation in the Tombigby, is 397 3-4 miles; and affords safe navigation the whole distance for vessels drawing under ten feet water. Tide water flows in this river above Fort St. Stephens—from the junction of the Alabama and Tombigby to the Cotton-Gin Port, the usual and common depth of water is, from ten to fifteen feet, and in many places from sixteen to twenty feet—above the Gin Port, there are

two branches of the Tombigby, of considerable size, to wit: Town Creek, the western branch, on which the Chickasaw Long Town is situate, through which the road from Nashville to Natches passes; and Lunecisto River, the eastern branch, which makes up in a direction parallel with Bear Creek, a water of Tennessee River below the shoals—from the Cotton-Gin Port, to the boatable water in Bear Creek, is about 30 miles: the ground will afford a good road from the one place to the other; the dividing ridge will be the most difficult, and it is very practicable to make a good waggon way over it—there is a road way marked out some years since by Captain Gaines under the order of government, from the Gin Port to the Natchez road, uniting with it, between Bear Creek, and Lunecisto River; this road crosses Lunecisto, and Town Creek—there is another road marked out from the Gin Port, to the head of the Muscle Shoals, crossing the dividing ridge, between Tombigby and Bear Creek, where a small branch of Tombigby breaks through that ridge, which branch is very near to a branch of Bear Creek; but I know not the width, or depth, of either; thence crossing Bear Creek, on, to the head of the shoals; the distance from 70 to 80 miles; the way is in some places hilly, and in others swampy, though it may be made a tolerable waggon way. There is on the south side of Tennessee River, a creek which empties into Tennessee, about half way between the head of the Muscle Shoals, and the Creek Ford, on which is situate Watts' town; and it appears that there is but a very short carrying place between that creek, and a branch of the Tombigby, called Buttehatchy Creek—on which probably Will's town is situate—and and it is but a little further, to the Tuscaloosa or Black-Warrior, a fine bold stream which empties into the Tombigby, opposite a large Bluff, about 80 or 100 miles above Fort St. Stephens. I know nothing of the depth or width of these creeks, or of the kind of ground between them for a road. From Mobile city, to the Cotton-Gin Port, it is by water 419 3-4 miles, by actual admeasurement; the whole of which distance may be navigated, by boats of 20 or 30 tons—the distance by land, is about 200 miles; and from the Cotton-Gin Port to the Tennessee, 70 miles; thence to Nashville 130 miles; making from Mobile city to Nashville, 400 miles—The foregoing will give you an idea of the distance, and of the routes from West Tennessee to Mobile—these routes and

distances, when compared to the long and circuitous navigation of the Mississippi from New-Orleans up to the state of Tennessee, and to the long road from Orleans to Nashville, which is travelled by all under many difficulties, are short and very desirable to have the use of, as ways to and from market, and would be particularly useful and convenient to bring return cargoes.

A population in any state of the United States exceeding two hundred and sixty thousand souls; possessing in value upwards of two millions and and an half of dollars of domestic manufactures and internal improvements as does Tennessee; and who acquire by their agricultural pursuits annually, large quantities of surplus produce of valuable kind; and who contribute largely to the support of the general government, certainly have a just right to expect to be indulged by the government of their choice in the privilege of using the most short, safe, and convenient routes by water and by land, which lead to a communication with the ocean at a point within the jurisdiction of the United States, and to pass thereon over a tract of country that the United States exercise sovereignty over, notwithstanding it may not be in immediate possession; and also to be privileged to establish comfortable stands on those ways for the accommodation of those who may use them going to and from market—this is a reasonable expectation and I do not doubt but it will in the shortest practicable time be realized.

A road from the Chickasaw Big Town to cross Tennessee River at or near the mouth of Duck River, would be very useful—the distance is about 50 miles, from thence to Clarksville is not exceeding 50 miles, and a good road can be had the whole way. If there was a road opened from Basheer's, on Pearl River, Mississippi Territory, to the mouth of Tanchipohoo River, which empties into lake Ponchartrain, 40 miles from Orleans, it would shorten the distance more than 150 miles from Big Town to Orleans —from Basheer's it is about one day's ride to the mouth of Tanchipohoo. A road from the present Natches road, to the Chickasaw Bluffs would be a useful one—and a road from the mouth of Duck River to the Mississippi, opposite to New-Madrid, is very much wanted—A better waggon road than is at present in use, or than ever can be in use without some governmental aid and regulation, to pass on

the land of the United States between the Ohio River and the Saline works, in the territory of Illinois, is very much wanted. I wrote to you some time ago about this. The road leading from Van's, or thereabouts, to John Lowry's ferry across the Tennessee River, thence to Nashville, via head of Elk, is represented to me to be a good road, and much travelled. From Nashville to Augusta, in Georgia, travelling this road, does not exceed 340 miles, which is a distance so much shorter from West Tennessee to Georgia than the present circuitous route, that to make it a post road would be right. John Lowry, of the Cherokee nation, has at his own expense, opened that road, and it being represented to me that he is desirous to be authorised by government to establish a turnpike thereon, for a term of years, it would be but right that he should be allowed to do so, that he might be compensated for his labour, and remunerated in the cost; but more especially, as it is a useful road to us in every way, it should be made a post road. The present post route is useful to us and convenient to others, and therefore should be continued; but the proposed route would be much more convenient to the people of West Tennessee, and also to that part of Kentucky adjoining it, and would expedite and facilitate communication, and promote the convenience of many who live in neither of those places.

I am, Sir, &c.

WILLIE BLOUNT.

MEDICAL AND CLASSICAL POETRY.

WITH more than ordinary pleasure we insert the two Poems of Mr. James Ross, on the *Bedford* and *Yellow Mineral Springs*, of Pennsylvania, in Latin Sapphic verse. So much knowledge of ancient literature, and such skill in the application of it, to modern subjects, deserve high commendation. And we give to this gentleman the credit of having, in this kind of composition, excelled the greater part of his countrymen.

J. ANDERSON, M. D.

Hos versiculos symbolum amicitiæ inscribit,

JA. ROSS.

IN FONTEM BEDFORDIÆ SALUTAREM.

—

Monte decurrens, velut amnis, alto,
Fons loquax nunquam, tacitus recedis,
Abditus terris, latebrasque celans
Fluminis unda.

Non alis campos virides vel agros ;
Non greges pascis, vitulosque vaccas :
Non tuæ ripæ generant leones
Dente furentes.

Sed tuas undas celebrant Puellæ,
Femulæ et Matres, Puerique Sponsi,
Has Senes undas adamant Anusque
Ore bibentes.

Hisque gaudentes Homines levabunt
Pectoris morbos, capitis dolores ;
Aurium sensus, laterumque pœnas
Sæpe lavando.

Has bibant isti quibus est podagra ;
Has quibus tussis mala, nec fuganda
Artibus, cura aut Medici periti ;
Namque levabunt.

Quin et afflicti ac oculisque lumbis
Has bibant undas, stomacho dolentes:
Pauperes, dites, recreentque corpus
Sæpe bibendo.

Has bibant undas vacui, salubres;
Nil nocent salus Puerisve Nymphis:
Pauperes multi hæc, simul atque dites,
Dicere possunt.

Bedfordiæ, (Pennsylvanorum) quarto }
Kal. Septemb. A. D. 1809. }

IN

FONTEM FLAVULUM, PIKELIANUM, PENNSYLVANORUM.

AD ASHBEL GREEN, S. S. T. D.

ODEN HANC

Cum plurimâ salute mitit JA. ROSS.

Quæreret si quis, socios, amicos
Unde sanaret vacuos salute;
Flavulos fontes adeant salubres
Fontis ad undas.

Fons et hic mitis facilisque gustu,
Volvit ac undas liquidas bibenti;
Atque potando has, pariter lavando
Omnia cedunt.

Hujus et fontis resident sodales
Lucus et pratum, nemora atque colles;
Rupei nec sunt scopulisve saxis,
Gramine culti.

Instar ac montis, domibus relictis,
Collis assurgens superas ad auras;
Destruat longas minitans et ædes,
Prospicit agros.

Fontis ac hujus spatia atque culta
Frugibus pulchris, oculoque gratis:
Hic virent fœtus, segetesque et Indi,
Tritica florent.

Arbores fructus variosque fundunt,
Hic jacent passim cerasa atque mala ;
Hic vigent herbæ, cucumisque melo,
Tempore quæque.

Plurimæ sylvæ viridesque circum,
Quæ domos ornant, similes columnis ;
Populi ingentes numerisque sertæ,
Hæc loca adumbrant.

Atque pascentes pecudes videndæ hinc,
Et boves magni reboant canori,
Dum greges pingues ovium vagantes
Gramina carpunt.

Quisquis aut nervis debilis, laborat
Aut malâ tussi, veniat citatus ;
Quisquis aut vitet lateris dolorem ;
Has bibat undas.

Utilis hic fons capitisque pœnis,
Mitigat valde stomachi dolores,
Excitat sensum, reficitque morsus
Tempore edendi.

Fontis et vires aliæ repertæ,
Sæpe et afflictis hominum medetur
Rheumatis morbo, medici nec ausis
Artibus uti.

Si quis et morbi fugeret dolores,
Sæpius fontes bibat ore hianti ;
Quisquis hos potet liquidos habebit
Fata morata.

Quisquis et vellet reparare corpus,
Adsit his, undæ facient valentem :
Talis est virtus, recreatque membra
Firmaque reddit.

Sentiat si quis, similis Catoni,
Viribis parci, bibere atque vellet
Nil aquæ mixtæ, velit atque puram,
Hanc bibat undam.

Ergo (nec mirum) veniunt frequentes.
Conjuges caræ, juvenes, mariti,
Et senes, sponsæ, pueri et puellæ
Dulce canentes.

Interem mites, hilaresque læti
Accubant mensis ; dapibusque pleni,
Quas Bonus struxit ; redeunt refecti
Viribus intus.

Ædibus J. Boni, Equitis.
Octavo Kal. Septembres, A. D. 1810.

Some account of Buchedemer, *and of the manner of taking and preparing it for human food: In a letter from* Samuel L. Mitchill *to* Robert Jameson, *Esq. Professor of Natural History in the University of Edinburgh, &c.*

OUR navigators from New-York have employed themselves with remarkable assiduity and success, in finding articles which will answer the purpose of bullion and specie, in their trade with the Chinese. Ginseng had been carried from the United States to Canton, until the demand was satisfied. Sandle-wood had been transported from Toconroba, until the forests were destroyed by the axe, and even the stumps and roots of the trees offered for sale. The eatable birds' nests had been gathered from the rocky cliffs of Banca and Java, and sold to the Mandarins at an extravagant price. The furs and skins of the different sorts of seals, had been collected from Tristan d'Acunha, St. Paul's, Amsterdam and Crozat's Isles, as well as from the North West Coast of North-America, and disposed of to the same purchasers, in extraordinary quantities, for their dresses: and the natives of the eastern groups of Polynesia, had been hired by these perspicacious adventurers, to fetch pearls to them from the deeps, for the like purpose. Such a trade to the East-Indies may be pronounced profitable, as it derives all its materials by industry, from their respective sources, and carries no precious metals abroad. All these productions, while they could be procured from their se-

veral sources, answered at different times the purpose of cash for the purchase of teas, silks, cottons, and other Chinese merchandize.

But there is another material which our citizens sell to the people of Canton. This is called, by those who deal in it, Bûchedemer. It is employed for food. Its name would seem to imply an immoveable object in the sea, because in its native situations, it scarcely stirs more than a stock. It commands, when artificially prepared, according to its quality, a price varying from twenty to seventy dollars for a pickle of one hundred and thirty-three pounds. It is a sort of fleshy mass. When cooked, it has by some been compared to the sounds of cod-fishes; while others have thought that it looked and tasted like well dressed cow-heels.

Bûchedemer is procured from the sea, and along its shores. Our voyagers represent it as being of an animal nature. From their description, and from a dried specimen in my possession, I have no doubt that it belongs to the class of Molluscas, and is of the kind called sea-puddings, or (outres de mer) marine bottles. It lies on the bottom, and being fastened there, possesses no proper locomotion. The size of a single one varies from two to twelve inches in length; it measures from one and a half to five inches round. Its organization is very simple, having but a single intestine, with few organs or bowels. When seized, it squirts from an orifice near one of its extremities, a stream of water to the distance sometimes of three feet: when merely touched it shrinks or contracts a little, and thereby gives proof of its animality. The principal mass is of a gelatinous nature, esteemed in diet by the Asiatics, especially those of China and Japan. From each of those countries, it is customary to send annually, two or more vessels to the straits of Macassar to procure cargoes of it.

I next describe to you the mode of preparing Bûchedemer. The animals are taken one by one and gutted. The liquid which escapes, and the offal, are thrown away. The remaining substance, containing neither bone, nor tendon, is, in this fresh and crude condition plunged into boiling water. There it remains for about fifteen minutes. It is then taken out, sufficiently cooked to make it cohere into a coagulum, somewhat between albumen and jelly. It is then dried in the sunshine, shade or smoke. When duly freed from moisture, it is packed up for market. It is often distin-

guished there as the white, the yellow and the black. The purchaser generally makes trial of it, by cooking, before he closes a bargain.

These creatures abound in the ocean around Madagascar, and the innumerable banks and shoals to the northward and eastward: as they also do among the Maldivia, the Pelew, the Friendly, the Society, Fejee and Banda islands. The coasts of Java and Amboyna are also inhabited by them. Captain Chase, who had examined them minutely in their native places, through a wide tract of ocean, told me he thought there were as many as fifteen living varieties which he had seen and could distinguish: but the common and obvious differences were four, to wit: the black, lead-coloured, spotted, and red.

On considering the character and qualities of this production, I am disposed to believe that it belongs to the family of Ascidia. Of this, about thirty-five species are already known and described by naturalists. They are all natives of the ocean and its shallows, adhering to rocks, stones, shells, and other substances. They are more or less gelatinous, and possess the power of dilating and contracting themselves. They can also eject the water which they have imbibed. Some of them have been long known to be esculent; and have accordingly been employed for human aliment.

Whether these, which our navigators catch and carry to Canton are new and undescribed species, I will not positively decide. The greater number of those described in the Systema Naturæ, are found in high northern latitudes, along the coasts of Norway and Greenland, quite to the frozen Atlantic sea. Of the two species described as living in the Mediterranean, one, the Ascidia Phusca is eaten by the Greeks. And though four species are described as natives of the Pacific Ocean; one on the coast of Chili; one among the Kurule Islands; one about Borneo, and one in the sea between Kamschatka and Alaska, they neither of them perfectly correspond with the account which our navigators give of the Bûchedemer.

You will please to observe, that the spirit of commercial enterprize which has given rise to this commuication, carries its votaries to the antipodes, in ordinary cases, and not unfrequently leads them to a complete circuit of the globe. Nothing in the whole history of naval activity by the Por-

tuguese, English, and Dutch can be found to surpass it; and very seldom indeed has any thing occurred to equal it.

Give full credit to my sincerity, while I assure you that I hold in very high consideration your learning, talents and useful exertions.

SAM. L. MITCHILL.

New-York, June 20th, 1811.

To Robt. Jameson, Esq. &c.

Examination, after death by SPOTTED FEVER, *of the morbid appearances in the Brain: by Messrs.* JOSEPH BARTLETT *and* JOB WILSON: *in a communication to the Editors.*

AMONG the many evils attendant on human nature, we find in this vicinity, cases of spotted fever, which in some places frequently prove mortal. Mrs. Eastman died with it, May 4th, 1810. This woman had previous to her last sickness, resided in Boscawen, N. H. a few years (where she died,) she was about thirty-five years of age, her constitution naturally robust: she had for many years been used to hard labour, and frequently exposed to sudden changes from heat to cold, &c. On the evening of the 1st of May, she went to bed as usual, free from any indisposition; the next morning, May 2d, she complained of pain in her limbs, a numbness in her left arm, lassitude, and a throbbing sensation in her head; in attempting to dress herself, she fell and remained senseless about two hours; her skin cold, and a cadaverous countenance; very low pulse, and difficult respiration. Soon after, the hot stage commenced, (which was about two and a half hours from the commencement of her disorder,) her senses were partially restored, and many radiated spots appeared on the skin; frequent puking of dark coloured matter, mixed with blood; her pulse low and intermitting—delirium.—The spots on her skin increased in size, and dark appearances resembling a bruise, the symptoms did not alter (except in violence) until the 4th of May, when she died.

A representation of her Brain as it appeared a few hours after death.

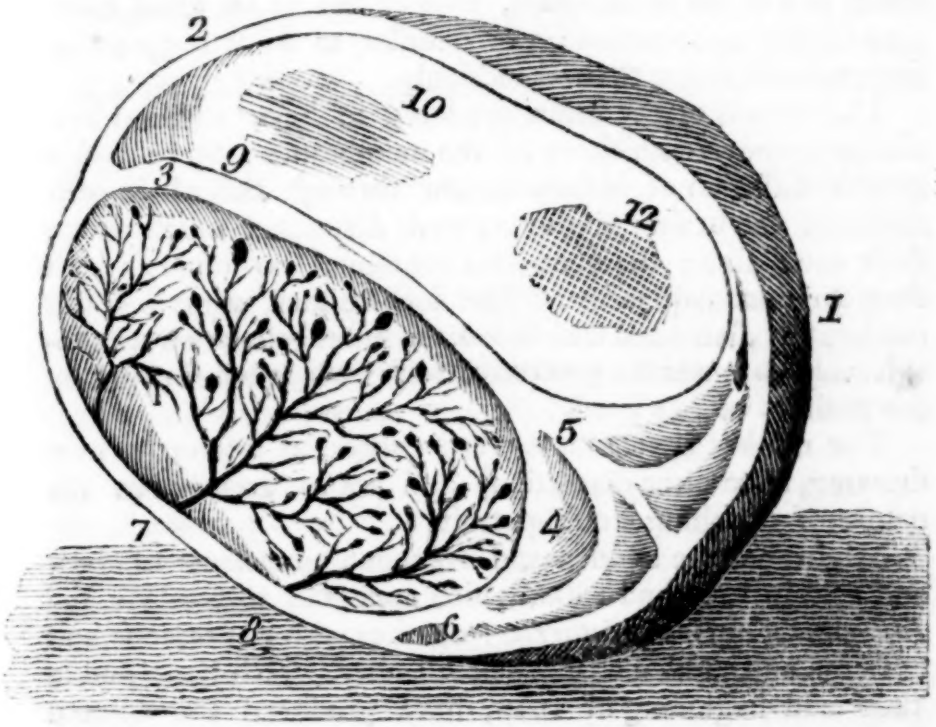

Fig. 1, shews the hairy scalp, separated from the bone, and turned back, over the occiput and bregmatis. Fig. 2, represents the lower section of the skull separated by the saw: the upper part being removed, the brain covered with its membranes is brought into view. Fig. 3, longitudinal sinus. Fig. 6, great lateral sinus. Fig. 5, fourth sinus. Fig. 4, tentorium. Figs. 7 and 8, shew the appearance of ruptures in the extreme branches of arteries or veins, or rather in the junction of the arteries with the veins. Fig. 9, represents the brain, divested of its membranes. Fig. 10, shews an extravasation of lymph on the surface of the brain. Fig. 12, a portion of the brain that was disorganised, and was torn away, adhering to the membrane, leaving the impression of parallel threads, with other parallel threads, crossing the first at right angles, as in the above figure. The membrane had evidently adhered to the brain, or rather to the membrane of the brain; and in separating the two membranes from each other, the more firm or fibrous part of the lower membrane remained entire, while the cellular part was

removed, adhering to the upper membrane. There appeared not the least degree of putrefaction; but a looseness of texture or disorganization through the whole substance of the brain, and of its membranes, though not in so great a degree in the membranes; very similar to what happens in frozen flesh, being thawed suddenly.

The vessels of the brain appeared to have suffered in a similar manner with those of the membranes: there was a general diffusion of bloody serum through the whole substance of the brain; the veins were distended much above their usual size; the ventricles contained no more lymph than their usual quantity. The longitudinal sinus was but moderately distended with blood, the lateral sinuses were considerably so; which, probably, was occasioned in part by the position of her head.

The morbid appearances were expressed correctly in a drawing, soon after dissection, and are as accurate as the nature of the thing would permit.

Might not the sudden and frequent vibrations of heat and cold in 1807 and 1808, which appeared to produce the *Influenza*, *(or Great Catarrh,)* together with wet seasons, and extreme and sudden changes of weather, which happened in 1809 and beginning of 1810, have produced the spotted fever?

JOSEPH BARTLETT,
JOB WILSON.

REVIEW.

DRAKE'S *Notices concerning Cincinnati.*—Continued from vol. 14, p. 175.

WE make an extract from the author's chapter on the climate of Ohio, p. 16.

"This more extensive migration of birds, (animals that are known to contribute very much to the dissemination of seeds) may be one reason why certain vegetables, such as the reed and catalpa, are found farther north in this, than the Atlantic countries; but the southern origin of the rivers of western Virginia, Kentucky, and Tennessee, and the fertile, calcareous, alluvial constitution of our soil, probably are the true causes.

"After all, however, it is not denied that this country is possibly warmer than the same parallels in the eastern states, but not by any means in such a degree as has been supposed; and Mr. Volney's tropical summers, during which the thermometer rises to 90 deg. and upwards, for 60 successive days, have never yet occurred here.*

"It is asserted in Loskiel's History of the Missions, and the opinion also prevails here, that as we advance northwardly on this meridian, the increase of cold is in a greater ratio than the increase of latitude. No conclusive corresponding observations have been made to determine this point; but the most striking of those which have been collected, shall be briefly related.

"At Lebanon, not more than 25 min. north of this place, according to the information of my friend Dr. J. Canby, and others, the complete evolution of vegetation in the spring, is several days later than at this place. Frost occurred there, after the middle of May, 1809, more than a

* In *guessing*, this ingenious traveller was not always fortunate; or else he would have lessened the heat of the atmosphere, and increased that of the river, which is not as he stated, 69 or 70 deg. in the summer, but 80 deg. or more.

week later than at this place. At Dayton, and throughout the champaign country, traversed by Madriver, in the latitude of Philadelphia, I am informed by Mr. Joseph Peirce, and other inhabitants of that tract, the snows are much more deep and durable than at this place; and Indian corn, planted as early as the tardy arrival and establishment of genial weather will permit, is frequently overtaken by autumnal frost. This is strictly true, however, only of the prairies; where the unobstructed and rapid progress of the winds produces great evaporation, and consequent coldness.

"At Fort Wayne, which is situated in a prairie, about 41 deg. 10 min. north, it appears from letters from Dr. Abraham Edwards, of the army, that in the winter of 1808—9, the surface of the ground was covered with snow, from the 1st of December to the 1st of April; whilst, during the same period, at this place, very little snow, but much rain fell; that on the 2d of January, in the same winter, at sunrise, the thermometer was 17 deg. below cypher; and that at 10 o'clock, A. M. on the 24th of the same month, it was 3 deg. below cypher; whilst, at the same period, on the former day, at this place, the thermometer was nearly 2 deg. above, and on the latter, about 10 degrees. That on the 21st March, of the same year, at that place, the snow was 14 inches deep, and the Lake of the Miami was closed up with a heavy body of ice; whilst, at this place, no snow covered the ground, and the thermometer rose as high as 40 degrees. The great coldness observed at Michilimakkinac, by Major Swan, and at Hudson's sea, by Umphreville & Robson, places, however, west of this meridian, is well known.

"It would be incorrect, from such desultory facts, to draw any general conclusion: they, however, render the opinion mentioned above, probable, and at the same time extend the comparison between the temperatures of the eastern and western states. They show that the parallel of 41 deg. in our meridians, as in those of Pennsylvania, is the southern limit of steady cold.

"What are the variations of standard temperature, as we advance along a parallel of latitude from the foot of the Alleghanies to the Stony Mountains? Future observations, in various places, can alone determine this. Two or three facts may be mentioned, however, which would induce a

belief that it does not at least get warmer as we advance westwardly. The Wabash and Mississippi freeze over in one night in lat. 38 deg.: and Lieut. Symmes informed me, that in 1809 the Arkansas froze over in one night, and continued frozen for several days. These facts, however, are inconclusive, and we must patiently wait for future cotemporaneous observations.

"That our climate has undergone a change, is a popular, and, with many, a favourite opinion. The regular observations made here, at an early period, are too few and desultory to determine this point accurately; and many of them cannot now be had. The deficiency, however, has been supplied in part by conversation with numerous intelligent persons, long resident here, and by an abstract obtained from Governor Sargent, through the politeness of Major John Brownson. The conclusion to be drawn from the whole of which is, that our summers are about the same, our winters nearly the same, though *possibly* somewhat colder.

"The winters, between 1785 and '91, are stated to have been uniformly mild. The winters of 1792-3, '95-6, '99-1800, 1805-6, and 1809-10, were also very mild. That of 1791-2 was severe, with deep snow; that which fell in January only, amounting to 24 inches. On the 23d of that month, the thermometer was 7 deg. below 0. The winter of 1796-7 is universally considered the coldest ever experienced here. On the morning of the 8th of January, according to Governor Sargent, the thermometer was 18 deg. below 0; and in the course of the month it was below that point four other mornings. The Ohio, that winter, was shut up with ice four weeks, and frost occurred as late as the 22d of May. The winters of 1798-9, 1803-4, 1804-5, 1806-7, and 1808-9, were all severe, but not as intense as that of 1796-7. Of the other winters, since 1790, nothing certain can be learned; but it is believed that they were temperate.

"Of the summers since that time, less can be collected than of winters. The prevalent opinion, however, is, that on an average they are neither cooler nor warmer than formerly. The summer of 1808 was excessively hot, while that of 1809 was temperate and pleasant.

"Respecting spring and autumn, not much early information can be obtained. But it appears, from the manu-

script furnished by Governor Sargent, that the latest vernal, and earliest autumnal frosts, in 1792, 3, 4, 5, 6, 7, and 8, occurred about the same time that they were observed to occur in 1807, 8, 9, and 10.

" From these data, although not so numerous as could be wished, we may conclude that the temperature of our climate is now nearly the same that it was 15 years ago: for warm and cool summers have lately occurred, and mild and severe winters succeeded each other before the year 1800, as well as since. If, however, these conclusions be rejected, and our winters and summers still be considered more intense than formerly, the cause must be sought in the partial felling of our forests, which admits the N. W. and S. W. winds, the principal sources of cold and heat, to move with increased velocity; and if so, I would say that just as much change has taken place as this cause can produce, which cannot be very considerable, for the face of our country is, as it were, only dotted with farms. In future, as Mr. Volney has conjectured, the more unobstructed progress of the S. W. wind will continue to increase the heat of our summers; but the increase of cold will probably cease at no very distant period; for whenever the forests of the territories N. W. of this are cut down, an amelioration of our winters must be the consequence."

His Calendarium Floræ contains observations on the progress of vegetation, the migrations of birds, and on other points of natural history, between February 27th, and November 22d, 1809. It contains many facts, enabling a judgment to be formed of the climate, and a comparison of it with other places.

The malady which he describes as a new disease, p. 30, is probably one of the forms of that distemper, of which we have heard so much of late, under the title of spotted and malignant fever.

It will be ever agreeable to lovers of improvement to learn (p. 29) that the plant *Frasera Carolinensis, or Waltheri*, mistakenly called *Columbo*, is a good medicine, and " equal, and possibly superior to most of our other indigenous bitters."

The utility and application of Insurances on Lives, and Life Annuities, briefly explained: with tables, shewing their relative values for different ages: by J. MEYER. New-York. Bruce, 1811. 8vo. p. 88.

IT has ever been a subject of regret, that life insurances have been so much neglected in our country; while policies can be readily obtained to indemnify against all accidents by fire or flood. It is not a little remarkable, that calculators should be so backward concerning this class of risks, connected with the duration of human existence. It is, however, proper to observe, that the subject, though not matured into a system among us, has nevertheless excited considerable attention. Soon after the establishment of the Manhattan Company, in 1799, a project of commencing insurance on lives was formed; and an able report was made to the directors by Mr. John Garnett, as their actuary on the occasion. But no active proceedings were ever held upon it, and the design was finally laid aside.

It was nevertheless renewed by the directors of the Eagle Fire Company, a corporation created in 1806. Occasionally, from the commencement of their operations to the present day, has this subject engaged their care. Several times have they made application to the legislature for an explicit grant of power, and a corresponding prolongation of their charter. And although doubts and difficulties, until the last session, impeded their views, pains were taken to mature the business by collecting information.

The respectable author of the present tract holds an employment under this company, and his publication may be considered as an exhibition of the progress made in the preparations for business. And as the object has been legitimated by the sovereign authority in the commonwealth, we shall be glad to see it carried into effect.

Mr. Meyer's work consists of three chapters and seventeen tables. The first chapter treats of insurances on lives; the second, examines annuities on lives; and the third, contains observations upon the data whereon the tables are predicated. The tables contain calculations for a great variety of cases; such for example, as the premium of insurance on single lives for terms of years, or for their whole duration; the premium for insuring 100 dollars, or an annuity

on survivorships ; to secure a sum on two joint lives ; the like on the longer of two lives ; what amount a given sum will grow to, in a given number of years, if paid at a certain time ; the value of an annuity on a single life ; of 100 dollars, annuity on the same ; the annuity, which may be bought for 100 dollars ; the annuity to be granted for 100 dollars on a particular condition ; the value of an annuity on two joint lives ; the value of an annuity of 100 dollars, deferred fifteen years ; the like of an annuity for terms of years ; with estimates of the probable duration of life in Portsmouth, (N. H.) and Philadelphia ; and the expectations of the continuance of life in several other places, such as Northampton, in England, according to Price ; Breslaw, in Germany, according to Halley ; New-York, according to Pintard and Hardie ; and London, according to Simpson.

The author professes that it is less the object of his work to instruct those who are conversant with the subject of which it treats, than to convey to the public such general information respecting it, as will assist in forming a judgment of the utility of insurances on lives. We cannot, therefore, do any thing that will so fully further his wishes of being generally understood, as by introducing him to speak for himself on the subject of Insurance on Lives.

" ' The insurance of a life is a contract whereby the in-
' surer, in consideration of a certain premium, either in a
' gross sum, or in annual payments, undertakes to pay the
' person for whose benefit the insurance is made, a stipulated
' sum of money, or an annuity equivalent, upon the death
' of the person whose life is insured, whenever this shall
' happen, if the insurance be for the whole life ; or in case this
' shall happen within a certain period, if the insurance be
' for a limited time.' "*

" This definition is applicable to the insurance of a single life ; but it may be extended, in a variety of ways, either to secure a stipulated sum, or an annuity upon the failure of two joint lives—the longest of two lives, or upon particular survivorships, in which two or more lives are concerned. The object of the present publication is, as far as its limits will permit, to explain some of the most familiar cases, in which important benefits may result from such insurances. The tables, to which the reader will be occasionally referred,

* Marshall on the law of Insurance.

have been inserted for the purpose of showing, by accurate calculation, the relative values, in most of the cases, which are the subject of this treatise.

" One of the objects of a life-insurance is, to establish a resource for families, whose precarious support depends upon the existence of a single person; with a view to obviate, or as far as possible to prevent, the distresses that must necessarily ensue, when deprived of that support by premature death.

" It is not always in the power, even of the most industrious, to make ample provision beyond their own lives, for their offspring or other dependents; but there are certainly situations where persons, by *annual savings*, may, by means of such insurances, create a fund, to which their families may look with confidence and security, and by which the distresses too often attendant on human life, may be in a great measure alleviated.

" To illustrate this by an example, let us suppose tha at person aged 27, having a certain income, which will fail with his life, could spare from his immediate necessities so small a sum as $ 3 per annum, it will appear by Table I. that such an annual payment, during the remainder of his life, would secure to his nominee or representative $ 100, payable upon his death. If he could spare $ 30 per annum, he would in the same manner secure $ 1000. An annual payment of $ 45 would secure, $ 1500, and so in proportion to any other yearly payment.* Moderate sums of money thus regularly appropriated for such purposes, might, perhaps, in some instances, deprive a family of some transient enjoyments; but it may be supposed that a privation of this kind, would be amply compensated by the reflection, that a fund is to grow out of what is thus saved, which, in time, may secure them against poverty.

" In other situations of life, where families are in affluent circumstances, and in the way of accumulating fortunes for their children, the advantage to be derived from investing money in this manner, does not appear so obvious, except it should be with a view " to lay something by against a

* The Pelican Life-Insurance Company of London charges, in America, for insuring 100 dollars, on a life aged 27, 3 dollars 75 cents, and for 1000 dollars, 37 dollars 50 cents, &c.

rainy day, that so they might anticipate the frowns of fortune."

"Such insurances may also be made to answer temporary purposes; as where a person possessing an income for a given term of years wishes to borrow money, he may by insuring his life, to the amount of the sum to be borrowed, and, by assigning the policy, secure the lender, during the term of the insurance, against the danger of losing his principal by the death of the borrower. If the sum in this case was $ 100, insured by annual policies, and the age 35 years, the annual premium would be $ 2 18*; increasing about 4 cents every year, as in the table before quoted, with liberty for the insurer of declining the risk, or increasing the premium beyond the rates specified in the table, according to the state of health of the person insured.

"Were the insurance for more than one year, and not exceeding five years, the annual premium, in the like case, would be $ 2 26, with the obligation on the part of the insurer to continue the risk, though the health of the person insured should be ever so much impaired. This is also the condition, if the insurance be made for seven or ten years, or for the whole duration of life.

"There are other circumstances which may induce a person to secure a contingent interest in this way; as, where an estate is held on a lease during a certain life, and the lessee would wish to improve the estate, in order to increase his income, provided he could be sure of remaining in possession a number of years sufficient to reimburse him, an insurance on the life on which the lease depends, to the amount to be expended, will secure him. In the same manner may any other life estate be insured, either for a term certain, or for the whole duration of the life on which the estate is depending.

"Insurances may be made by one person for the benefit of another, on the contingency of his surviving. In this case, the premiums will be found lower than those for insuring single lives: the reason is, that here the payment of the sum insured is suspended, on the contingency that one life shall survive another; whereas, in the former instance, it is certainly to be paid on the failure of a given life. In these cases, the premiums in Table II. will be applicable,

* By the London Pelican Company 2 dollars 72 cents.

which are to be paid annually during the joint continuance of the lives of the possessor and expectant, thus; the payment of $ 3 03 annually, during the joint lives of a husband, aged 35, and a wife, aged 30, will, according to this table, entitle the wife, should she survive her husband, either to receive $ 100 when she becomes a widow, or to an annuity (if that should be preferred) of $ 6 92, payable to her during life.

" Any payments greater or less will entitle the expectants to gross sums or annuities proportionally greater or less, thus; suppose the sum insured $ 1000, instead of 100, the annual payments would be $ 30 30 and the annuity $ 69 20.

" Table III. shows the values in annual payments of an annuity of $ 100, depending on the contingency of one life surviving another. If a set of married men should enter into a society, for the purpose of securing annuities to their widows, they may in this table find the sums which every member ought to contribute according to his age, so as to entitle his widow to an annuity of $ 100 during her life should she survive her husband: for instance, if the ages of a husband and wife are 35 and 30 respectively, the annual payments would be $ 43 77 during their joint lives. The values of any other reversionary annuity will be as much greater or less than this, as the annuity itself is greater or less.

" A life estate may, in like manner, be secured, by appropriating part of the annual income for that purpose, as in the following instance. Suppose a widow, aged 45, possessing an estate for life, marry a second husband aged 60, who would wish to secure the estate during his life, in case the wife should die before him, by the table which has been just explained, it appears, that an annual payment of $ 27 28, during the joint lives, will entitle the husband, in case he should survive his wife, to an annuity of $ 100 during his survivorship. To make the annuity $ 1000 would, therefore, require an annual payment of $ 272 80, and so on.

" But if the age of the wife was 60, and that of the husband 45, an annuity of $ 100, payable on the same condition, would cost $ 80 77 yearly; or an annuity of $ 1000 $ 807 70, as may be seen in the table, where the possessor is 60, and the expectant 45.

" Two persons may also insure a sum on their joint lives;

payable whenever one of them shall die. The premiums in this case will be found in table IV. These are, as they obviously must be, much higher than the premiums in the second table; for here the claim becomes due as soon as either of two persons shall die. By turning to the table it will be seen, that if two persons each 40 years of age, for instance, had mutually agreed to leave to the one who should outlive the other, the sum of $ 100, the annual premium to be paid during the existence of both lives would be $ 6 70, and in the same proportion for any greater sum insured.

" The value of the same insurance, if required on the longest of two lives at the age of 40, for the purpose of leaving $ 100 to a third person, to be received on the failure of the last of the two lives would only be $ 2 52 in annual payments, during the continuance of the longest life of the two —see Table V. The reason why the premium here is so much lower than in the case last stated, may be easily inferred; for there the expectant is to come possessed of the reversionary sum on the extinction of the joint lives, that is, as soon as one of them shall fail; but in the present case he cannot come in possession till the extinction of both lives, and therefore the annual payments, until the claim becomes due, must be supposed to last much longer, or accumulate for a greater length of time.

" The tables which have been thus far explained, include all the common cases of insurances on single lives, as well as on survivorships between two lives for their whole duration. But an expectation dependent on a survivorship may be restricted to a term of years only. The values in such cases, for every difference of age and terms, cannot however be exhibited in tables, without going through a great number of them, and for that reason they must necessarily be here omitted.

" For the same reason I shall pass by the variety of estates in expectancy that may be insured on three lives, or on any survivorship between them. To determine the values of these insurances is a work of greater difficulty, and would not accord with the design of this pamphlet.

" The Table No. VI. comes next in order. This is founded on a scheme, contemplating the endowment of children, or to provide portions for them, when arriving at a certain age, by investing moderate sums of money for that purpose while they are infants.

" The utility of this scheme will appear evident to all parents, who are desirous of laying an early foundation for the future prosperity of their children. If they can, for instance, devote $ 100 to that object, suppose at the time the child is one year old or under, it will be seen in the table that at the age of 21, that sum will produce $ 542, or at the age of 25, $ 714, in case the person on whose life the money is paid should be then living ; for this his chance will be nearly as 5 to 3, at the time he is one year old ; but if he arrives at the age of 5 years, his chance of living to 21, will be as 4 to one, increasing in his favour as he advances. At 10 it will be more than 8 to 1, and at 15 his chance of living 6 years longer will be more than 16 to 1, &c.

" If the money be invested on the life of a child, at a more advanced age, it will of course produce less, as shown in the table ; but increasing always at compound interest, and including the chance of survivorship.

" The equivalent annuity in the table, is that sum to which the person would be entitled annually during his life, in case (supposing the claim determined in his favour) such an annuity should be preferred to the sum in gross.

" In the tables which we have now gone through, the values in annual payments are only set down, it being the usual mode in which the premiums for life-insurances are paid. Instead of this, they may be paid in one gross sum, particularly if the insurance is only for a short term of years ; but if for a long term, or for the whole life, it is supposed that the *insured* can employ his money more advantageously, and would therefore decline to advance any considerable sum, for which he is allowed less than legal interest, when he is permitted to discharge the value of the insurance in annual payments. Without this alternative too, persons of moderate fortunes who, perhaps, have greater inducements to establish such funds as are here spoken of, than the rich, would in many instances, be unable to effect that which by *annual savings* they might accomplish."

Sketches of a tour to the Western Country, through the states of Ohio and Kentucky; a voyage down the Ohio and Mississippi Rivers; and a trip through the Mississippi Territory and part of West Florida; commenced at Philadelphia in the winter of 1807, *and concluded in* 1809. *By* F. CUMING; *with notes and an appendix, containing some interesting facts, together with a notice of an expedition through Louisiana.* Pittsburgh. Cramer, Spear, and Eichbaum, 1810. 8vo. p. 504.

THE subjects of this publication are so fully detailed in the title page, that nothing more need be said on that head. But as the author has judged it proper to offer some observations by way of explanation or apology, we insert them.

"It might be asked why he had not commenced the tour with a particular description of Philadelphia. His reasons for not doing so were, in the first place, Philadelphia is a city so minutely described in every modern geographical publication, that few readers are unacquainted with its local situation between the rivers Delaware and Schuylkill, its regularity of plan, its rapid progress, &c. Whereas the country through which the author travelled has been very little treated of by tourists, of course is little known to strangers; though an account of its appearance, its natural properties, its improvements, and the manner of its mixed population, perhaps merits a place on the shelves of the literati, as much as the numerous tours and travels through Europe, Asia and Africa with which they are loaded. Indeed, in one point of view, such a book may be much more useful, as it may serve for a record of the situation of a country, in its infancy, which from its rapid improvement in a very few years, will form a wonderful contrast to its present state, while the trans-Atlantic travellers have to treat of countries either arrived at the highest state of improvement, or of others buried in the gloom of ignorance and barbarity, and of course both stationary, and therefore not affording any variety of consequence, during the two last centuries (in which time they have been the theme of so many able pens) excepting the style of writing and manner of description."

"In the second place—It was the author's wish to condense as much into one cheap volume as he could make it contain,

and had he entered into minute descriptions of places the best known, he would had so much the less room for the original matter, with which he intended to constitute the bulk of the work.

"It was intended to have put the work to the press in the winter of 1807, the year in which the tour commenced, but a series of disappointments essayed by the author, has unavoidably postponed it, and has given him an opportunity of adding to the original plan, some account of the lower parts of the Ohio and Mississippi Rivers, and the countries washed by them, particularly the Mississippi territory, which has become of great importance to the United States, and is not without its value to Europe, from its immense supply of cotton to the European manufactures.

"As the intention of the author was the increase of information, he makes no apology for the plainness of his style, and he expects, on that account, to be spared any criticism. Should, however, any one think proper to bestow a leisure hour in the remarking of his inaccuracies, or the incorrectness of his language, he can have no possible objection, as criticism of that kind always tends to general improvement."

To this address on the part of Mr. Cuming, there is added an advertisement on the part of the editor and publisher, Mr. Cramer, which we also copy in his own words.

"An apology may be necessary on my part, for the notes and the appendix which I have taken the liberty to add to the author's tour. My view in doing this has been solely for the benefit of the reader, throwing into view many parts of the country our traveller had not an opportunity of visiting, and taking notice of other objects of interest, at least to the curious, which fell not immediately under the eye of the author, endeavouring upon the whole, to throw as much light upon the history of our country, its antiquity and present situation and prospects, as the limits of the little work would possibly admit. The arrangement of the appendix will not be found so regular as I could have wished, which arose from the matter having been collected from various sources while the press was going on with the work, and frequently I was hurried by the compositors to furnish copy from hour to hour.

"From the anxiety shewn by some of our distant correspondents, booksellers and others, to get a hold of the work

now about being presented to the public, a rapid sale may be calculated on for this edition, and if we see our way clear, a second shall be put to press with improvements and some corrections of errors which have escaped the most vigilant attention. In the meantime, any hint from gentlemen of observation tending to enhance the value of a future edition of the work, will be thankfully acknowledged."

This is the journal of a pleasing and industrious tourist, who gives the incidents that befel him from day to day; but does not present his reader with the profound researches of science, nor the expanded reveries of speculation. For those who love to accompany a traveller in his book, as they sit by their fire-sides, and are wholly aloof from his toils, hardships and perils, this will be found an entertaining volume; and they who find too little of statistical and philosophical remark in the tour, may turn to the appendix, in which the editor has collected much solid and useful information, as well from living and original sources, as from the most modern and approved publications. Among these, we think the description of Lexington in Kentucky, (p. 405), the account of the large bones dug up at the Big-Bone-Lick (p. 409), the character of the philosophical Indian Chief, (p. 411), the speeches between the missionary and Red-Jacket, (p. 429), and various topographical and descriptive tracts, mostly relating to the new settlements in Ohio, will well repay the trouble of perusing them.

A Treatise on a malignant epidemic, commonly called SPOTTED FEVER; *interspersed with remarks on the nature of fever in general, &c.; and an appendix, in which is re-published a number of Essays written by different authors on this epidemic, with the addition of original notes. Containing also a few original and selected cases, with clinical remarks. By* ELISHA NORTH. New-York. Swords—1811. 8vo. pp. 249.

THE author of the present treatise is the same, we believe, that, in 1801, announced the discovery of the vaccine virus among the cows, in the neighbourhood of Goshen, (Connecticut) and the propagation of the disease from

it among human beings, by inoculation, with complete effect. (See M. Rep. vol. 5, p. 93.)

He now appears before the public, in the two-fold capacity of an original observer of the disease which he describes, and of a collector of the accounts, written by others. The care with which we have recorded in our work the information received, concerning this alarming distemper, particularly in our vol. 13, p. 42—47, 391—402, may be considered as an indication of the desire we felt to collect and perpetuate every particular relative to it. We accordingly rejoice to find that Dr. N. has gathered many more of the *disjecta membra* of intelligence, and embodied them into the same volume with his own observations.

He considers the malady, whose history he has written, as a new and singular disease, which made its first appearance at Medfield, in Massachusetts, some time in 1806. Ever since, it has been the scourge and terror of the people, in Massachusetts, Rhode-Island, Connecticut, Vermont, and some districts of New-York, destroying at some places great numbers, after a most violent and rapid train of symptoms. As there had been no entire and regular history of this awful pestilence, the author has undertaken to lay before his readers a more full and authentic narrative, than was contained in the paragraphs and essays of the newspapers, and the minutes and proceedings of the medical societies. Such an enlarged account will tend to exhibit in one view all that is known on the subject. If the epidemic should extend its ravages, and afflict a wider range of country, this publication will be an excellent guide to practitioners: and if it should decline and rage no more, the description of such a peculiar and fatal disease, will be both curious and useful.

But, to proceed with the author's treatise, we extract, as a specimen of Dr. N.'s discriminating powers, his observations on the arrangement of Spotted Fever in Nosology. (p. 6.)

"Whether the spotted fever may be considered as only a variety of cynanche maligna, or scarlatina, and be arranged under the order *phlegmasiæ* or *exanthemata;* or whether it ought to be regarded as only a variety of the malignant petechial fever of authors; or whether it is a new species of disease, to be added to the list of human calamities, is yet to be determined. It seems to partake of the nature of three or

four other diseases. In the worst form, in many respects it resembles the cynanche maligna. To this disorder it is similar in the suddenness of the attack, and its sudden mortality. In this form, it also resembles the malignant petechial fever of authors, in the great prostration of strength which occurs early in the disease, in the petechiæ attending, and sometimes in the great length of time to which it extends itself. In its milder form, from the red fiery eruptions which sometimes attend, it assumes the appearance of scarlatina. This fever also resembles the plague in some respects; buboes and carbuncles have been observed to occur. But although there is a similarity, in some respects, to these last mentioned diseases, yet there is also, in many respects, a dissimilarity. The cynanche maligna and scarlatina anginosa are said to be contagious disorders; this is not: those have great throat-affection; this has not: those are diseases of short duration; this is sometimes of short, at other times of long duration. The malignant fever is dissimilar to this disease in the following respects: the petechiæ do not generally appear in so early a stage of that fever as in this: that fever makes a more regular course in its progress, like other fevers, than this: death does not happen so suddenly in that fever, in seven, fourteen, or twenty days; in this, it commonly happens within forty-eight hours from the attack; that fever is said to be contagious; this is not.

"Having made the preceding remarks, I will now attempt to arrange this epidemic in a system of nosology. Should others, however, be inclined to assign it a different place, I am not disposed to contend with them on the subject. I think it ought not to be arranged under the order phlegmasiæ, for the following reason: although in some few cases, local inflammation has been induced by the disease, yet this has not oftener happened in this epidemic than in other malignant fevers. Whether it more properly belongs to the order febres, or exanthemata, is not so clear. The following are, however, my reasons for not referring it to the order exanthemata. 1. It is not a contagious disease. 2. Persons have it more than once. 3. Eruptions are by no means a necessary attendant upon the disease.

"If it is admitted that this disorder more properly belongs to the order febres, the next question is, whether it is more proper to consider it as a variety of the malignant fe-

ver, or a new disease? As it differs in so many respectsfrom all other diseases, I am disposed to believe that it ought to be regarded as a new species of typhus. This new disease, to make the picture more nearly resemble the original, ought to be divided into two varieties; to distinguish which, the epithets *mitior* and *gravior* may be necessary.

"From the preceding nosological remarks, it will be perceived, that the arrangement of typhus fevers, in a system of nosology, which is proposed, will stand thus: taking typhus for a genus, the species will be:

1. Typhus contagiosus.*
2. Typhus icterodes.
3. Typhus petechialis malignus.
4. Typhus petechialis malignus novus.

"The epithets *mitior* and *gravior* are to be used, to mark, or to distinguish more accurately, the different grades or varieties of each of these species."

We next offer to our readers Dr. N.'s description of the spotted fever, as serving at once to make them acquainted with its multifarious appearances, and to give them the means of forming an opinion of his skill in delineating symptoms. (p. 10.)

"This disease may be divided into two varieties, for the purpose of description; indeed, nature has so divided it. These varieties, however, by imperceptible gradations run into each other, so that it may be difficult, in many cases, to draw the line of distinction. But this difficulty is a common one, where the laws of nature are in contemplation. Day and night present a striking contrast; yet during twilight, the light and the darkness are so intermingled, that the beholder knows not exactly where to draw the line of distinction.

"If there is any one symptom which may be regarded as a premonitory symptom of this disease, in all its varieties, it is a sore throat. I have observed this in so many cases, and have found so few exceptions, that, were it not an attendant symptom of so many other disorders, I should consider it as a pretty sure premonitory sign of this com-

"* Dr. Cullen considers, if we may judge from his definition of typhus, all typhus fevers to be contagious. That the first species in this arrangement is contagious I have no doubt; that the fourth species is not contagious I am equally confident; with respect to the second and third species I have my doubts."

plaint; and yet this affection is so slight, that few patients mention it, unless they are questioned respecting it.

"*On the symptoms of the first species of the fever.*—These are the following: A great, surprising, and sudden loss of strength, is a constant and prominent symptom; a cold surface also presents itself, sometimes accompanied with chills, sometimes not. The extremities, in the cold stage, appear of a purplish or livid colour. Violent pain of the head, and many times of the limbs, is among the first symptoms; sometimes one, at other times the other is first attacked. When the pain commences in the limbs, it soon mounts up to the head. Distress about the præcordia, violent and extreme, also universal agony of the whole system, and numbness of the extremities, are often added to the above list of symptoms. The breathing is often laborious, and attended with frequent sighing. Syncope sometimes occurs. The pulse in this, and in all the varieties and stages of this complaint, is soft, weak, and never hard, although sometimes as slow, and even slower than in health; it is often intermitting, fluttering, or totally absent, even in cases in which the patient has afterwards recovered. The tongue is generally covered with a white coat; but in some bilious cases it is of a brownish hue: sometimes it has been observed to have a bloodless appearance, which has been considered as almost a certain token of approaching death. The urine deviates but little from health, except a hysteric flow which has sometimes been observed to happen. There is loss of appetite, and sickness at stomach, and vomiting. The worst form this disease ever assumes, particularly in children, is that of coma, or cholera morbus. It frequently assumes the form of a violent mania at the time, or within a few hours of the attack, particularly in sanguine young men. Sometimes delirium is among the first symptoms; sometimes coma; and many times petechiæ. This symptom does not occur so often as the name which this disease has obtained would lead one to expect: these vary in size, and in colour, from a bright red to a dark purple.

"Unless the patient recovers, he commonly dies within the first twelve, twenty-four, or forty-eight hours. Death is ushered in by the gradual giving up of the powers of life, by syncope, by the febrile apoplexy, or by convulsions. In those who recover, the disorder puts on, either before or soon after the expiration of the first forty-eight hours, the

form of the second variety of this disease; or, to express myself in the words of others, "runs into the form of a mild typhus of uncertain duration."

"As petechiæ, when they do occur, may almost always be considered as marking the worst form of its disease, I will now describe them in the words of Dr. Strong. "Blind hæmorrhages, or those where the blood flowing from the vessels of the skin, is detained beneath the cuticle, forming petechial spots, were more common:" i. e. more common than other hæmorrhages of which he had been treating. "So frequent indeed was this species of hæmorrhage during the first season in which the disease prevailed, that it was considered as one of its most striking characteristics, and gave rise to the name *petechial*, or *spotted fever*, which has been very generally, though very improperly, applied to the disease. These spots commonly appeared on the face, neck, and extremities, frequently over the whole body. They were generally observed in the early stages of the disease. In size they were various, commonly the head of a pin and a six cent bit would mark the two extremes. These spots were evidently formed by extravasated blood; they did not rise above the surface, and would not recede upon pressure. In colour, they varied from a common to a very dark purple, and the darker the shade, the more fatal the prognosis. These spots, which in 1806-7 marked almost every case, in 1808-9 were rarely observed."* In addition to this, I would observe, that in some protracted cases, where the patient has recovered, these spots have sphacelated, and suppurated, and, upon coming out, have left ulcers, which required some time to heal.

"*On the symptoms of the second species of the fever.*—These are milder in their aspect. At the onset, a chilly fit comes on; but this is soon succeeded by a warm surface, and a fever resembling a mild typhus, or the fever attendant on the scarlatina; no petechiæ, but a *red fiery eruption*, or, what is perhaps more common, no eruption at all; pain of the head and limbs is less severe; less universal agony of the system; loss of appetite, nausea, but seldom vomiting or purging; no coma; no delirium; or, if delirium, very slight, and only at the height of the evening paroxysm. Pulse but little removed from health in quickness; sometimes full, but never

* See Dr. Nathan Strong, jun.'s Inaugural Dissertation, p. 10.

hard. The tongue is white and moist; slight sore throat. Medicines, when given, have their usual effects, and easily control the symptoms. This species or variety resembles, in its duration, the scarlatina.

"The red fiery eruptions may generally be regarded when they do occur, as designating the second variety of this disease. These will now be described. Dr. Fisk, when comparing this disease with scarlatina anginosa, observes, that it resembles this, "in the eruption of the skin, and subsequent desquamation of the cuticle, and in the anasarcous swellings which sometimes ensue." He also observes, when describing the eruption, that, "sometimes it appears like a miliary eruption over the whole body, in patches in the bend of the arm, on the breast and neck, without any discolouration at first, but followed with inflammation—sometimes in detached inflamed spots upon the face, arms, &c. sometimes like the nettle-rash." (See chap. xvii. sec. 1.) Dr. Bestor says, after having described the petechial spots, "In others, there are bright and red ones, either permanent or transient; in some others, a pustular efflorescence, resembling measles, which, if early, is a favourable prognostic." (See chap. xvi. sec. 1.)

"*On the more unusual symptoms of the fever.*—These are a dilatation, and, in some, a contraction of the pupils of the eyes; redness and suffusion of the eyes; blindness in some, in others double or treble vision; a drawing back of the head, with a kind of clonic spasm of the muscles of the neck; aphthæ in the throat; an inflammation like erysipelas upon the limbs; swelling like rheumatism of the joints; paralysis of an arm or a leg, or both; carbuncles and buboes; strangury, and to such a degree as to require the use of the catheter; a violent pain in the finger or toe; hysteric symptoms; pain like colic of the bowels; a slight cough; œdematous and shining appearance of the skin; transitory and evanescent flushes of heat; erratic pains flying from part to part; a deadly feeling of the stomach; a corpse-like rigidity of the limbs; hæmorrhages, which were less frequent, however, than the other symptoms would lead one to suspect; costiveness; and many other symptoms too tedious to relate.

"The disease has been observed to assume different shapes, according to the different constitutions of the patient affected with it: Thus women were more liable to hysteric

symptoms; in children it sometimes appeared in the form of cholera morbus; and in young men of the sanguine temperament it not unfrequently produced a violent mania.

"*On the type of the fever.*—I have found it difficult to detect the nature of the epidemic in this respect. The observations of others, who have written on this subject, afford me little assistance in investigating this part of my subject. They appear not to have turned their attention to it. The result of my own observations amounts to this: that there is generally an exacerbation of fever at evening. By this, however, I do not mean to be understood, that this is always rendered evident by increase of heat and quickness of pulse, as in other fevers, but by an aggravation of the other symptoms of the disease. I have thought that something like a long paroxysm of fever, continuing from twelve to twenty-four or forty-eight hours, took place in the commencement of this complaint; that afterwards daily paroxysms and remissions were apparent; and that these paroxysms became shorter and lighter until the patient was left convalescent. Much irregularity, however, in all these respects prevails.

"*On anomalous cases of the epidemic.*—Anomalous cases have occurred, in which a paroxysm and intermission of the symptoms, like ague and fever, have happened: some of these have continued during four or five weeks. Other cases have happened in which the patient had the common symptoms of this disease, such as delirium, sore throat, head-ach, fainting fits, spots, &c. without any fever at all. These patients had a weak pulse, but no febrile irregularity of pulse of any kind, nor flushes of heat or chills. Some of these cases were of considerable duration. As evidence of the correctness of the opinion, that such ought to be regarded as having had the disease, it may be observed, that these cases occurred in families in which other branches of the family had the complaint in the usual form. Hence it was observed, (in chap. xii. sec. 1.) that fever was "not a necessary attendant on the disease." Cases have occurred, in which, after the patient has been relieved by appropriate remedies, from the depressed state of the system at the onset of the disease, something like a relapse has taken place, producing, at a subsequent period, the same train of symptoms as at first.

" Having detailed the symptoms of this disease, I will now select such as may be considered as pathognomonic. These are pain of the head, soreness of the throat, white tongue, weak pulse, and great prostration of strength. (See chap. xii. sec. 1.)

" An increase of the temperature of the body is so common and prominent a symptom in most fevers, that it has usually constituted a part of the definition of fever. An increased frequency of the pulse makes another part of this definition. Neither of these are prominent symptoms in the disorder. Cases occur, it is true, in which the temperature is increased above the natural standard; but these are rare, and in many of these cases, if not all, the heat of the body has been raised by artificial means. This, however, is so far from being a common or prominent symptom, that, especially in the worst species of this fever, most physicians, who have had experience in it, consider their patients relieved from a most deplorable state, as soon as they get the surface of the body warm by any remedies which may be in their power. The urine is not changed in its appearance, as in other fevers. Subsultus tendinum is another symptom which is common to bad forms of typhus, but which has seldom been noticed in this disorder. As a general rule, there is less thirst and more appetite in this fever than in others.

" To render the foregoing history more complete, it may be necessary to observe, that children, women, young people, and those of the sanguine temperament and lax fibre, are most liable to the disorder; that certain families oftener have it than others; that patients may have it more than once. This, like all other epidemics, has been more fatal upon its first appearance than afterwards. All those physicians who have witnessed its ravages agree, that it is not contagious or infectious.

" I have known more than one instance, in which persons, upon coming from a part of the country where this epidemic had never prevailed, and residing a short time in a town in which this disorder had been epidemic, have had the disease, and at a season when the inhabitants of said town were free from it. I have also known persons who reside in sections of the country where this epidemic has appeared, after having been on a journey to places where it had never been, attacked with it soon after returning home,

and at a season when it did not attack those in different circumstances. Whether others have made similar observations we are not informed. If the united observations of different physicians, in different situations, should be similar to those I have made, it would establish an important fact; from which very curious, if not useful deductions might be made. Do such patients have the disorder in a greater or less degree than others?"

That we may give a more satisfactory sketch of the spotted fever, we add a few of the cases which the author has annexed to his treatise.

"Miss —— BRADLEY, aged twelve years, of a weakly constitution, was attacked, after eating her dinner as usual, on Friday, March 27, 1809, with a pain in her head and limbs. The warm pediluvium, it is said, relieved her so much that she slept an hour immediately afterwards. She was attended, during the remaining part of the day and evening, with much thirst, vomiting and head-ach; she also was in universal distress. She drank, during this time, large quantities of cold water. At bed time a pitcher of cold drink was set within her reach, and she was then left alone during the remainder of the night. Next morning (Saturday, March 29th,) she was completely comatose. I was then called for the first time to visit her. Her neck, breast, and other parts of her body were thickly covered with dark-coloured petechiæ and vibices; she had no pulse in her wrist; her limbs were cold and stiff, like a corpse; she lay like a person in a most profound apoplexy. I made a vigorous effort to relieve her from this dreadful situation, but in vain; she died on this day before sunset. I however succeeded, by the means which I had been in the habit of using (see chap. xiv. sec. 2.) for the sinking state of this fever, in restoring warmth to the surface, and pulse to the wrist; but her coma was never, in the least degree, relieved.

"Had the proper remedies been used at the onset, and had the use of these been properly followed up in this case, I have believed that the petechiæ, coma, &c. would have been prevented, and a cure effected. The circumstance of the marked relief which was obtained by so simple a remedy as the warm pediluvium, tends much to strengthen this opinion."

"POLLY WADHAMS, aged twenty-two years, was brought two miles on horseback to my house, May 8th, 1810. I

was informed, that after doing a hard day's work at washing, (May 7th) and going without dinner, she sat down to tea about five o'clock, P. M. Immediately upon this she fell with her head upon the table, and raising herself up, said, what is the matter with me? She was helped on to the bed; she then was senseless; her eyes were wide open, and set in her head; her jaws were set; her face was red, except around the mouth, which was pale; she continued, it is said, in this situation half an hour. Her friends think she was not faint. Although her jaws were so set that it was difficult to get down some elix. asthmat. yet her limbs were not cramped. While she was in this situation, the warm pediluvium was used. After this, her stockings were put on, and she was helped on to the bed, when she soon came out of the fit, and appeared to have her reason. During this night, three teaspoonfuls of elix. asthmat. at three different times, were given: she complained in the night of much head-ach, and was delirious. It was not discovered until morning that her left hand and foot were paralytic. Previously to this, the complaint was thought to be an hysteric affection. She informed her sister, previously to her having the fit, that she was afraid she was about to have the sick head-ach. On the Sunday preceding, May 6th, she had a sore throat.

"Tuesday morning, between ten and eleven o'clock, when she arrived at my house, her appearance was the following: no aphthæ could be discovered in the throat, a small aphthous speck was discovered upon the inside of her lip; she was pale, her skin about the hands and arms very cold, and of a livid hue; the whole of one side was affected with a numbness and want of feeling, which was very disagreeable to her, and concerning which she appeared to be frightened.

"Her right hand trembled when she attempted to move it: a kind of torpor of mind was apparent, although at this time there were no other signs of delirium; pain of the head; tongue but little furred, if furred at all; her pulse was weak, otherwise natural; her feet were cold, and of a bluish or livid colour; notwithstanding her cold surface, her heat, when measured by the thermometer, was natural. Upon her arrival at my house, after sitting a few minutes, she requested to be helped on to the bed, and as soon as this was done she complained of being aguish; a glass of warm wine was immediately given her; after waiting half an hour, she

still complaining of being very cold, another glass of warm wine, mixed with two-thirds of a teaspoonful of essence of peppermint, was given. She at length began to shake with the cold, and symptoms of derangement of mind began to appear. Blocks and brands prepared were now laid into her bed; two blisters were applied, one to the lame arm, the other to the lame leg; two-thirds of a glass of wine, mixed with two-thirds of a teaspoonful of aromatic ammoniated alkohol, was now exhibited. At length her face and eyes began to be red, and tears to run involuntarily. She now appeared to be quite delirious: she complained of the headach, and to relieve this symptom, one grain of opium was administered, and the hot blocks kept around her. She about this time began to grow warm. She constantly complained of distress of some kind or other; she said there was a piece of her head gone, and she wanted to have it put in again, to prevent, as she repeatedly said, the cold air from passing into her head. She also said there was a hole which let the cold air into her stomach. She talked incessantly, and amongst other things she said, Do people ever have four eyes and six fingers? All at once she appeared to be in a fright, and complained that she could not breathe, and wished to be raised up. Her breathing was, indeed, at this time laborious. She was raised up, fresh air was let into the room, and this symptom was soon better; she would bite her numb fingers, and wished to have her sister pinch, rub, and scratch them. At length she began to complain of the smarting of her blisters; but this, she frequently said of her own accord, was much better than that dead numbness which she had experienced.

"She has had symptoms like strangury, which frightened her much; her urine was however clear and white, like hysteria. She was thirsty, and drank freely of aromatic teas.

"After she became warm, and began to sweat, she was evidently relieved of her distress, and became more rational. This scene occupied the space of about four hours.

"At four o'clock, P. M. she was very comfortable, attended with a warm surface; the hot things were gradually removed from her bed.

"At six o'clock her blisters were dressed; these were drawn well; she was now perfectly rational; her feet and ancles, her hand and arms, instead of a purplish or livid

hue, were now beautifully white. Her left arm was quite lame, she could not move it without the assistance of the other; she said every joint in her was in pain; she had some head-ach; her pulse full and good.

"At seven o'clock she called for a piece of fresh meat; it was allowed her. Heat, measured at this time, was found natural; pulse eighty; she was now red, and her skin had a kind of shining appearance; but one spot was discovered —this was red; her skin felt warm.

"At eight o'clock her meat was found to suit her stomach; she was ordered part of a glass of wine; she rested well through the night. She continued to gain fast till Thursday, (May 10th) when she had so far recovered the use of her arm and leg, as to be able to ride home in a chaise. She took, while at my house, one quart of Madeira wine, and part of a pint of Peruvian bark and Virginia snake-root tea, with the addition of an anodyne every night.

"May 13th. At this time she began to do a little work. This patient had the spotted fever twenty-five months previous to this attack."

"HANNAH DRESSER, aged twenty years, a slender, feeble girl, had the spotted fever in August 1808: she was again attacked on Sunday morning, May 13th, 1810.

"She complained of head-ach, sore-throat, want of appetite, but kept about this day, and at night went to bed as usual. At eleven o'clock, P. M. she was discovered to be in a violent delirium or mania; it required two men all night to hold her in bed. During this night she took one spoonful of elix. asthmat. and one hundred and fifty drops of tinct. opii; she also took about one pint of a tea made of castor and Virginia snake-root; also a little brandy sling: a blister was applied to the nape of the neck, which drew well by morning: external heat was applied by means of brands prepared. All this neither allayed her delirium nor caused much sweating: she however became warm. At nine o'clock, Monday morning, (May 14th) her heat, measured by the thermometer, in the axilla, was one degree above the natural temperature, her pulse one hundred. The tepid bath was now used, and appeared to afford some relief.

"From this time until Wednesday noon, (May 16th) being a little more than twice twenty-four hours, her situation was as follows: she continued constantly delirious, but not so raving as she was the first night; and during this period,

one woman was able to manage her in bed, by holding her hands, and frequently soothing her; she almost constantly complained of her head; oh! my head—was a frequent exclamation; she rolled her eyes up; much of the time knew no person; had double vision; her eyes were red at times, and her tongue was much furred; she was very restless and uneasy, and at night slept but very little. She had no spots, but a shining skin, and prickled, and wanted to scratch much. Her heat, as often as it was measured, was found natural; pulse eighty.

"During these two days she took about one quart of wine, also twice a day, about thirty or forty drops of tinct. opii, mixed with twenty or thirty drops of ammoniated aromatic alkohol; she made use of aromatic sulphuric acid, and gum. camphor; the last of these three days she was ordered three-fourths of a wine-glass of a decoction of Peruvian bark and Virginia snake-root, to be given once in three hours; an enema was exhibited. This operated but little: a blister was applied to her arm, which drew well.

"At noon, Wednesday, (May 16th) an important change took place, which may be considered as forming an era in the history of her complaint. Her reason was suddenly restored; she now thought she had been sick one night, (a long night, as she expressed it) and one day—namely, Sunday; having completely lost two days and two nights.

"This day, (May 16th) four o'clock, P. M. four hours after her reason was restored, her situation was as follows: pulse eighty-nine, and weak; she was extremely debilitated, had fainting turns frequently, especially if worried; her head felt very disagreeable; noise and light hurt her much; her tongue was becoming clean, and was red and sore; wine made her mouth smart. At this time I gave her five aloetic pills, nothing having passed her bowels since she was taken sick, except what little was brought off by the injection which was administered yesterday. I ordered her to continue the same medicines which she had used, except the aromatic sulphuric acid, which I thought would make her mouth smart. At this time I concluded she would do well in a few days. On the night of the 17th May, however, she had an ague-fit, and turns of syncope, slept some, and was somewhat delirious; her pills did not operate; an injection was given, which operated well. From the 17th to the 20th May, she did not gain so fast as expected; she had turns of

fever every night; her fainting turns were less frequent; she had turns of sweating; her appetite was poor. Her medicines were continued as usual, except the substitution of tinct. cort. com. in lieu of the decoction of the bark; she thought the tinct. suited best. May 20th, another injection was administered. May 21st, she was evidently gaining, and, on the 22d, sat up and was convalescent.

"She began sometime between the 17th and 20th of May to take the tinct. cort. com. and has taken in the whole eight ounces; she has used from a pint to a quart of wine daily, besides as much food as she would take.

"The 8th of June I was again called to Hannah Dresser, who was said to be dying. I was then informed by her friends that she had been apparently gaining her health during the last fifteen days, and had been able to ride on horseback from place to place, &c. but on the day before she began to be more unwell, and at night she was deranged. Just before I was called she had, as I was informed, a kind of cataleptic fit: she lay in this fit half an hour or more, and when she came out of it, had convulsions of the limbs, and was somewhat delirious. She complained much of her head, and had turns of crying and laughing like hysteria. Ordered her a decoction of castor, Virginia snake-root, and rad. gentian, and wine pro re nata, and anodynes twice a day. From this time until June 11th, being three days, she gained none; was very low; had double vision; was blind sometimes; had sinking turns, in which her jaws were set. During these low turns her pulse, (I was told by the nurse) sometimes retreated from the wrist; she had spasms frequently, sometimes of the limbs, sometimes of the neck, drawing her head back like opisthotonos; she was attended with sickness at stomach; her tongue was furred; she had once in twenty-four hours paroxysms of heat; in these she appeared red; these continued from one to two hours, and occurred sometimes in the night, sometimes in the day time.

"During these three days she took one pint and a half of the above decoction, one quart of wine, besides her anodynes and food. From the 11th to the 18th there was no essential alteration, except one day she had two convulsion fits: head-ach and sickness at stomach were predominant symptoms.

"During this period she took one bottle of porter, three bottles of cider, three bottles of bark beer, one quart of port wine, and tinct. opii twice a day; she took for food during this time (the nurse says) as much meat as one person's meal, four cups of tea daily, besides food of the bread kind, strawberries, &c. Her bowels were opened once in two or three days, by aloetic pills and injections. One of the last days she took three small doses of calomel; this was the day on which she had her convulsion fits: she also complained on this day of pain in her bowels. Resolved to abandon the use of calomel and opium, and to depend more on food and exercise. Ordered her to be got into a chair and drawed about the room daily, &c.

"June 21st, her appetite better; she fainted this day once in her chair. Ordered, notwithstanding, perseverance in exercising her. In a few days she was so well as to be able to be carried out in a chaise, &c. and is gradually gaining her strength; she however is, at this time, viz. July 18th, very miserable in her appearance.

"Exercise and food are now the only means she uses.

"*Clinical remarks.*—I attended this patient the whole of the first night of her illness, (viz. May 13th) and was determined to allay her mania with opium, but was disappointed. Her deliriums leaving her at noon, May 16th, is not to be attributed to any particular medicine, but to the nature of her disorder. Were I to treat her again, I think I should use less opium.

"Her relapse was probably occasioned by a cold wet storm which occurred at the same time."

"WADSWORTH LOOMIS, aged five years, was suddenly attacked, on the 24th of May, 1810, with general debility, coldness of extremities, inability to walk, pain in the head, and vomiting: his eyes were shut, and he was constantly inclined to doze: his pulse was quick and weak, and within two hours from the attack his tongue was covered with a white fur.

"*Treatment.*—Immersed his feet in warm water, applied an epispastic to each leg, and made external applications of blocks boiled in water and wrapped in flannel, and gave a dose of calom. ppt. After this I gave ess. menth. pip. tinct. and gum. camph. and tinct. opii in small doses, frequently repeated. For drink gave pennyroyal tea. By these means, in about four hours, the coldness of the extremities was

removed. The violence of the disease seemed in some degree lessened, when the action was increased, and a proper determination to the surface was restored. The succeeding heat was moderate, but greater than in health.

"25th, A. M. There is a remission of all the symptoms —medicine continued. P. M. two o'clock. There is too much heat—lay aside tinct. opii, and other stimulants, and give spt. nitri dulc. small beer, and effervescing mixture. Nine o'clock. Excessive excitement, violent heat, active pulse, tossing, picking the bed-clothes, delirium.

"Take infusion of senna and rad. glycyrrhiz. in divided doses, and repeat every hour till it operates as a cathartic. Discontinue tinct, opii, camph. ess. menth. pip. and give spt. nitri dulc. crystals of tartar, effervescing mixture, and small beer. The symptoms last mentioned continued most of the night, but were followed by a remission in the morning.

"26th, A. M. No delirium—skin moist and moderately warm. Omit crem tart. give drinks as before, and vary the quantity of spt. nit. dulc. according as the fever shall be increased or diminished.

"27th. Has had no exacerbation of fever. Give light drinks, and for food chicken broth.

"28th. Has no fever; is free from complaint; has appetite for food, and is evidently convalescent. Continue the broth for food, and, if his appetite continues, let him gradually return to his usual diet.

"29th. Cured."

The treatment, as far as experience has hitherto warranted a course of practice, is contained in the following synoptical table: (p. 60—61.)

"On the regimen proper in this fever; the means are, rest of body and mind; avoiding fear; fresh air; liquid nutritious diet; agreeable cordial drinks.

"On the means necessary to keep up the strength of the patient; these are, bark and bitters; fermented liquors, such as wine; sulphuric acid.

"On the means necessary to obviate certain symptoms and circumstances which have a tendency to cause death, or otherwise to injure the system; these are in the

"1st. Comatose, or sinking, or torpid state.—External

heat; diffusible stimulants liberally, such as wine, opium, blisters, æther, peppermint, brandy, &c.

"2. Cholera Morbus state.—Injections of yeast and tinct. opii; ablution of the surface; solution of carbonate of soda and essence of peppermint; port wine and water, &c.

"3. Delirium, or maniacal state.—External heat, particularly to the feet and legs; opium, camphor, wine, ardent spirit, &c. Confinement; a blister to the nape of the neck.

"4. In the hysteric form.—Warm pediluvium; tinct. castor. com.—tinct. assafœtid. opium, &c.

"5. In the vomiting state.—Opium and camphor in a solid form, combined; bladders of warm water to the stomach: warm cordials; or, if the patient is hot, the neutral mixture.

"6. Colic form.—A blister, and fomentations to the bowels; injections of yeast and brandy, and purging injections, &c.

"7. In strangury.—If the patient is hot, a tepid bath; emollient enemas; if cold, stimulating enemas, such as those made of brandy or turpentine; salt of amber, or the catheter.

"8. Paralysis of any part.—Local stimulants, as blisters, opodeldoc.

"9. Pain and distress of all kinds.—Opium; a blister to the pained parts.

"10. Head-ach.—A blister to the nape of the neck.

"11. Heat above the natural standard.—Cold and tepid ablution; cold drink.

"12. Costiveness.—Rhubarb; aloetics; and injections.

"13. Turgescence of blood in the lungs.—Venesection.

"14. Aphthæ.—Gargles of sulphuric acid.

"15. Second species.—General indication to be fulfilled.

"16. Carbuncles and buboes.—These are salutary; very little to be done.

"17. Intermitting anomalous cases.—Bark; arsenic.

"18. Anomalous cases unconnected with fever.—General tonic plan of treatment.

"19. Cases complicated with inflammation.—Calomel; local blood-letting; general blood-letting has been used.

"20. Bilious cases.—Emetics; cathartics; calomel.

"21. Cases complicated with worms.—Anthelmintics.

"22. Other complicated cases.—The treatment to be learnt from considering the nature of the disorder with which it is complicated."

For other practical observations, especially on the employment of calomel as a remedy; on the degree of torpor and debility in the system; and on the quantity of stimulants which may be safely prescribed, we must refer to the chapters, in which the intelligent author discusses the several subjects.

The papers contained in Dr. North's appendices, are the history of the spotted fever of Medfield, by doctors Danielson and Mann; president Fitch's publication concerning it, with the letters of doctors North and Lyman; remarks on the same disease, by Dr. S. Woodward; history of the same, by Elisha North, written in 1807-8; remarks on the neglect of physicians relative to the spotted fever, by Mr. Babcock; the proceedings of the Massachusetts Medical Society, in 1810; remarks on spotted fever, by Dr. Bestor of Simsbury; sketch of the spotted fever, by Dr. O. Fiske; observations on anomalous and irregular diseases, by Dr. G. Williamson; a collection of cases, from the author's own observation, and from the description of doctors Strong, Stevenson, Bates, and Lyman; an account of the spotted fever in Orange County, (N. Y.) by Dr. D. R. Arnell; and several other articles, domestic and foreign: the whole amounting to a highly interesting mass of information on this afflicting and terrible distemper. And we tender to the judicious and industrious compiler, our acknowledgments for the services he has rendered to the public, and more particularly to the profession, in collecting such a body of valuable matter, and for having shed much light on a subject heretofore so little understood.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

DOMESTIC.

MAD DOGS.

IN May and June, alarms were entertained that rabid dogs were unusually frequent in New-York, and various other places. Several quadrupeds were bitten, and a horse was said to have died of hydrophobia. Human beings were also wounded by their teeth, and great uneasiness was expressed for the safety of such persons. The regulation in New-York city against dogs, passed 13th July, 1801, having been found inefficient, a new law was passed in May, 1811. We give it a place for the more general information, and refer for the particular restraints and accidents, touching mad dogs, when the last public agitation existed concerning them, to our vol. 5, p. 72—80.

" Sec. 1. Be it ordained by the Mayor, Aldermen and Commonalty of the city of New-York, in Common Council convened, That no dog shall be suffered to go at large, in the city of New-York, on or after the first day of June next.

" Sec. 2. And be it further ordained, That there shall be annually levied and collected for every dog which shall be owned or kept in the said city, the sum of three dollars; and the owner or possessor of every such dog shall, on or before the first Monday of July in every year, make report in writing to such persons as the Common Council shall appoint Register and Collector for that purpose, of the number of dogs by him or her owned or kept in the said city, and shall at the same time pay to the said register and collector the tax imposed by this ordinance, under the penalty of fifty cents for every day he or she shall neglect to make

report and pay such tax; and the said collector and register shall keep an alphabetical list of the names of all persons who shall have paid such tax, of the number of dogs reported, and the sum paid for each.

"Sec. 3. And be it further ordained, That the said register and collector shall be entitled to twenty per cent. upon all monies by him collected, and shall on the first Mondays of August, November, February, and May, in every year, account under oath with the Chamberlain, for the residue of such tax which shall have been by him received; and shall, within one week after his appointment, open an office for such registry, giving at least six days previous notice thereof in at least three of the public newspapers printed in this city, and shall keep said office open for that purpose every day, Sundays excepted, from the hour of nine o'clock in the morning until three o'clock in the afternoon, until the said first Monday of July next; and shall, in each and every year hereafter, at least one month before the first Monday of July, open his said office for the purpose aforesaid, giving at least six days previous notice in manner aforesaid, of the time and place at which his said office will be so opened, and shall keep the same open for the purpose aforesaid every day, Sundays excepted, during the hours aforesaid, until the said first Monday of July in each and every year.

"Sec. 4. And be it further ordained, That every dog found at large, contrary to the provisions of this ordinance, on or after the first day of June next, shall be liable to be seized and killed by the said register and collector, or such other person or persons as he shall for that purpose from time to time appoint, which said register and collector or such other person or persons so appointed, shall cause the carcases of all dogs by them seized and killed to be forthwith removed and buried; and for every dog so killed, removed and buried, shall be entitled to receive the sum of fifty cents to be paid him out of the city treasury—Provided always, that it shall be lawful for any person to kill a dog going at large on or after the first day of June next out of the lamp district of this city: And that it shall be lawful for any person to kill any dog going at large in any part of the city who shall bite or attempt to bite any person or animal.

"Sec. 5. And be it further ordained, That any person who shall hinder or molest the said register and collector,

or other person or persons so to be appointed as aforesaid, in carrying into effect the provisions of this ordinance, shall forfeit and pay the sum of thirty dollars, for each offence.

"Sec. 6. And be it further ordained, that all fines and penalties imposed by this ordinance, shall and may be sued for, recovered and received by the said register and collector, to be applied and accounted for by him, in the same manner with the monies received for taxes."

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Remedies for Hydrophobia.

WE publish from our file of papers four alleged cures for the disease consequent upon the bite of a mad dog, or other rabid animal. They show that human art is as yet lamentably deficient in the means of curing this horrid distemper. We record them, however, that they may be added to the stock of knowledge, imperfect as it is, which we possess on this subject. (For cases of hydrophobia and intelligence about rabid animals, see the index to the 5th vol. of our Hex. 1, and the 10th vol. p. 391 of the same; with various other tracts in the subsequent volumes.)

No. I.

The Tonquin Remedy, or a mixture of Cinnabar and Musk.

Information of Sir George Cobb, from Tonquin, on the remedy applied by the Chinese, for the bite of a mad dog, and by that people considered as an infallible cure. Communicated by Mr. William Page.

Take 24 grains of native Cinnabar;
24 do. of factitious do. and
15 do. of Musk;

grind all these together, into an *exceeding* fine powder, and put it into a *small* tea cup of arrack, rum, or brandy, *let it be well mixed*, and give it to the person as soon as possible after the bite.

A second dose of the same must be repeated 30 *days after*, and a third *may be taken* in 30 days more. *But, if the symptoms* of madness appear on the persons, they must take *one* of the above doses immediately, and a second in *an hour*

after; and if wanted, a third must be given a *few hours* afterwards.

This medicine, it is affirmed, has been given to hundreds with success.

If in the madness, they cannot take it in the liquid, make it up into a bolus *with honey;* and after the *two* first doses, let it be repeated every *three* or *four* hours, until the patient be recovered.

No. II.

The Albany Remedy, or mixture of burned Bone and Verdigris.

The legislature of New-York passed an act on the 28th of February, 1806, granting a compensation of one thousand dollars to John M. Crous, for discovering and publishing a cure for hydrophobia, or canine madness. The preamble to the act states, the said person had produced a variety of documents, tending to confirm the reality of his skill in hydrophobia, and that he was willing to make the same public for a compensation: and the law gives the before mentioned sum, on condition that the discoverer should deliver to the comptroller of the treasury, under oath, his true prescription and method of cure; and enter into recognizance to refund the money, provided the discovery should within four years prove deceptive and ineffectual. The comptroller was directed to cause the prescription to be published in the newspapers for three successive weeks. This is as follows:

Cure for the Bite of the Mad Dog.

The following is an account and prescription of the remedy and cure for the hydrophobia, or canine madness, made by John M. Crous, in conformity to an act of the legislature of the state of New-York, viz.

1st. Take an ounce of the jaw bone of a dog, burned and pulverized, or pounded to fine dust.

2dly. Take the false tongue of a newly foaled colt; let that be also dried and pulverized—and

3dly. Take one scruple of the verdigris which is raised on the surface of old copper, by laying in moist earth: the coppers of George I. or II. are the purest and best.

Mix these ingredients together, and if the patient be an

adult, or full grown, take one common teaspoonful a day; and so on in proportion, for a child, according to its age.

In one hour after, take the filings of the one half of a copper of the above kind, if to be had, if not, then a small increased quantity of any baser metal of the kind: this to be taken in a small quantity of water.

The next morning fasting, (or before eating) repeat the same as before.

This, if complied with, after the biting of the dog, and before symptoms of madness, will effectually prevent any appearance of the disorder; but if afterwards symptoms shall appear, a physician must be immediately applied to, to administer the following, viz.

Three drams of the verdigris of the kind before mentioned with half an ounce of calomel to be taken at one dose. This quantity the physician need not fear to administer, as the re-action of the venom then diffused through the whole system of the patient, neutralizes considerably the powerful quality of the medicine; and

Secondly. If in four hours thereafter the patient is not completely relieved, administer four grains of pure opium, or one hundred and twenty drops of liquid laudanum.

N. B. The patient must be careful to avoid the use of milk for several days after taking any of the aforegoing medicine.

JOHN M. CROUS.

No. III.

A Newspaper Remedy.

It is asserted by some authors that onions peeled, and seasoned with honey and salt, are a sovereign remedy for the bite of a mad dog; and that either raw or cooked they are an excellent remedy for the dropsy, dissipating the obstructions, and re-establishing the circulation of the lymph, and promoting copious discharges of urine.

No. IV.

Webb's Remedy.

" A copy of the original recipe, of John Webb, for the bite of a mad dog, given by a lady to his grandmother, 150

years since, or upwards—Given at Fring, Herts. Taken from the original by James Webb, son of the above John Webb, deceased.

" Take of the leaf and tender bud of rue half of a large of a pint, beer measure. Take the same quantity of large teacupful when cut small, the cup to hold about a quarter box, or tree box; also cut this small; add nine leaves of red sage cut small; let them be without blemish. Take half a pint of new wheat meal from the mill, or good fine flour, and about one table spoonful of yeast; mix it together as dough; let it lay about half an hour; then bake or broil it. Take one third of it in new milk each morning. This quantity for man or woman; the same quantity for a sheep, hog, or dog; but for a cow or horse, take one large teacupful of rue cut small, and the same of box, but only nine leaves of sage. Give this in milk or some other liquid. Half this quantity will do of the rue and box, for a colt or calf, and but nine leaves of the sage.

" My father has cured some men when mad. Then he took one teacupful of rue, and one of box, and nine leaves of sage, boiled it well in a pint of milk, and gave it as quick as possible. Half this quantity of rue and box for a small child; but, in all cases, no more or less than nine leaves of sage. After about thirty-eight years experience with my father, and the use of the recipe—this I pledge on word and oath.

(Signed) " JAMES WEBB.

" February 25, 1807."

This has been celebrated as a grand medicine by the English veterinary surgeon, Delabere P. Blaine, who has published in the Medical and Surgical Review, the foregoing receipt, and the following cases to support its efficacy.

" A dog evidently mad was seen to bite two pigs belonging to a cottager; both were bitten on the nose severely. He then made his way into this gentleman's yard, where he seized a servant maid while stooping, by the lip, which he bit entirely through, but was prevented doing further mischief by the game-keeper, who pinned him to the ground with a stable fork. The cottager's pigs were immediately bought by this gentleman for the express purpose of experiment. Nothing of the usual kind was applied to either the girl or the pigs; but the former immediately put herself

under Webb's care, took the remedy, and never felt further ill effect from the accident. The pigs were confined in separate sties; to one was administered the remedy; to the other nothing was given. In about ten days this latter drooped, became furious, and died with all the symptoms of rabies; the other was not affected, but was afterwards fatted and sent to market.

"The second instance is that of six soldiers belonging to the 1st regiment of Fencibles, at that time commanded by Col. Villiers, which men were all severely bitten by a dog, unquestionably mad. One of the field officers in the regiment was a relation of the gentleman above alluded to, and was himself acquainted with the supposed efficacy of this remedy, and has considerable dependence on it. By his desire the medicine was sent for, and regularly administered to the whole of them. The result of which was, that no ill effect followed. It will be naturally asked, were no other means resorted to in a regiment where there would be, of course, good medical advice? My informant thinks there was no other preventive made use of in the majority of them at least, if not in the whole.

"Being called to inspect a dog, bitten by another that was evidently mad, I learned that two persons had been also bitten by the same dog. Having frequently seen that too little alarm exists after so dreadful an accident, or that improper and inefficient means are frequently resorted to, from the faith in the Ormskirk medicine or sea-bathing, from motives of humanity I sought out these people. One was a female, the dog's mistress, whose arm was only slightly grazed; the other was an ostler at a public house, in Paddington, whose leg was severely bitten. The woman promised me she would go to Marylebone Infirmary, the next day; but I in vain attempted to stimulate the man to have the part removed, though I offered to do it, and to attend to it gratis. His reply was, that he had sent for Wm. Webb's medicine, and he was certain that he needed nothing else, and would trust to that alone. This was early in the last summer, and he remains perfectly well to this time. A person who keeps a menagerie, in the suburbs of London, had one of his dogs become mad, which dog, before he was secured, bit five other dogs, belonging to the same person. Webb's remedy was immediately sent for, for all of them; four out of five were readily made to swallow it; but no

means were sufficient to make the fifth swallow more than a small portion, and what was got down was soon rejected by the stomach. The event was, that the four who retained the medicine, remained unaffected, and were at length sold, a considerable time after, as sporting dogs, while the fifth dog went mad, and died a short time afterwards. I could relate many other circumstances that are at least presumptive proofs of its efficacy—and I could enumerate several persons, as well as animals, who have lately taken it, and many without any other precautions, all of whom are at present well, but as it might be thought a sufficient time had not elapsed to pronounce them out of danger, I shall not adduce these at this time.

"It is now between five and six weeks since I unfortunately met with a similar accident; having been bitten by a dog, in the last stage of madness, and which died in an hour afterwards. Independent, therefore, of what I before felt for others, I must now be supposed to have a peculiar sympathy for the unfortunate in this particular, and very forcibly to wish that some means might be brought to light whereby the danger of this dreadful malady could be avoided. My opinion of this medicine was such, that though I did not neglect immediately to apply the excision and the potent cautery, yet I the next morning went to the old peasant for his remedy, which I regularly took four subsequent mornings. I mention this not as any proof of its efficacy, but, simply as it will prove more than a volume of words, my placing no small dependence upon its virtues; as it can hardly be supposed that I would go this distance, or submit to take such a nauseating dose for four mornings, without a considerable opinion of it.

"The dispenser gives it in the form of either cake or liquid, and generally directs that the quantity given be taken in three doses; one each morning after fasting. The effect it produces is nausea, (without, in general, vomiting) giddiness, tremors, and cold sweats. These effects last two, three, or four hours, and then go off and leave the person free from ailment."

Bosquillon and Bouriat's publications on the Nature and Cure of Rabies.

Dr. Bosquillon, a learned and distinguished physician of

Paris, has published a memoir, the object of which is to prove that canine madness is caused frequently by terror, and is in reality nothing else than the offspring of pusillanimity.

This intrepid inquirer has introduced his fingers into the mouths of persons labouring under hydrophobia, or affected by rabies. This he doubtless performed under a conviction, founded on facts, which he knew and stated, of persons who without subsequent inconvenience, had removed with their fingers, the saliva adhering to the lips and mouths of rabid patients. Among others is that of a clergyman, who was bitten near one of his nails by his son, whose spittle he removed with a handkerchief; and this very handkerchief he continued to employ for blowing his nose and wiping himself, when the spittings of the child reached even to his face.

Many similar occurrences have been well stated, to prove that the human species, though it receives rabid venom, does not communicate it. Contrary assertions, however, have been made by persons worthy of credit. It may, nevertheless, be believed, that some circumstances have escaped these relators, or that they have been influenced by prejudices, when they affirmed the possibility of communicating rabies by human saliva.

Acts of devotion for the public safety are common enough among distinguished physicians. Recent examples may be easily cited. Doctor Samoëlowitz inoculated himself for the plague, while that disease raged in Moscow; and Dr. Desgenettes underwent a similar operation in Egypt, before the whole French army, to dissipate the apprehensions of the soldiery concerning a disease, the mere name of which struck them with affright.

As to rabies, Hippocrates is silent on the communication of it to human beings. Aristotle remarks, that dogs are subject to madness, to quinsy, and gout: that the first renders them furious and prone to bite other animals, who would thereupon grow furious, with the exception of man; and that the disease so excited, would destroy all whom it seized, with the reserve of mankind alone.

According to Plutarch, it was not until two hundred years after Aristotle, that the poison of rabies began to manifest itself among men, and to act upon individuals of the human species, as upon other irritable and sentient beings.

In 1809, a judicious and well written pamphlet was published at Paris, by B. F. Bouriat, physician of the ancient University of Montpellier, &c. &c. under the title of *Recherches et Reflections sur la Rage, &c.* This writer relates the ravages of a mad wolf, in the prefecture of Tours, in 1808. He considers rabies as originating in dogs, wolves, and foxes only; but communicable occasionally by cats and hogs. He advises the following precautionary treatment.

1. To make the wounds from the teeth of the rabid animal bleed as long as possible; extending the same to the scratches and excoriations.

2. To wash them first with a brine, or solution of common salt; and afterwards with warm alkaline ley, which may be readily prepared, in a quarter of an hour, by boiling a little quicklime with some fresh wood ashes in a sufficient quantity of water. This must be so applied as to penetrate quite to the bottom of the injury.

3. The wounds must then be cauterised with oxygenated muriatic acid, nitric acid, caustic, ammoniac, gun-powder burned to the bottom of the wound, &c. as soon as possible.

4. That all these things may be duly done, professional aid should be sought without delay. Then the expediency of applying the actual cautery, or red-hot iron, will be best determined; and when nothing forbids, that necessary application will be made by a skilful hand.

5. These means should be employed as early as possible, in all cases deemed suspicious; and a good and copious suppuration promoted. (p. 78-79.)

Dr. B. publishes a remarkable letter from Mr. De Barruel-Bauvert, on the cure and recovery of a hydrophobic dog, by the venomous bite of a viper. The experiment was tried by the Abbé Spallanzani, when he was at Naples. The serpent bit the quadruped in the upper lip, and was instantly torn to pieces. But the by-standers were persuaded that the venom of this snake was the most effectual antidote to the poison of rabies.

We take this opportunity of expressing our acknowledgments to Drs. B. & F. for their politeness in sending us copies of their respective publications.

Scudder's progress in collecting and preparing Animals.

OF this promising artist's zeal and skill in zoological research, we made honourable mention in our Vol. 14, p. 88. After the lapse of a twelvemonth, we repeat our commendation of the industry and fidelity with which he prepares his specimens of beasts, birds, and other creatures. The Canvass-back ducks, in Mr. S.'s collection, were shot in the neighbourhood of New-York, and put it in the power of every competent judge to decide whether this exquisite fowl, which we described in our Vol. 5, p. 342, noticed again in our Vol. 8, p. 208, and introduced once more in our Vol. 10, p. 407, is really the bird so much extolled near the Susquehannah and Potomac, and is the *Anas Ferina* of Europe. They may determine also, from the specimen in this museum, whether the Shoal-Island Duck of this country, so distinguished for its warm, elastic and copious down, and occasionally found on the shores of Long-Island, is the Anas Mollissima or Eider-Duck of Britain. It is now also in the power of the discerning to settle the question, whether the Gannet of our shores, is the true Pelicanus Bassanus, or Solan Goose of the Scotch, from the fine specimens in this collection. They who are acquainted with the European woodcock, (Scolopax Ruricola) may compare their ideas with the natural preparation here, of our American variety of this delicious bird.

We give these as illustrations of his birds. But he is not less successful in his quadrupeds. His weasels, minks, muskrats, moles, and otters, are remarkably well done; as are also his serpents, tortoises, and lizards. We hope, in due time, to see in this growing collection a complete assemblage of all our *game-birds*, of all the *web-footed water fowls*, of all the *snipe* and *plover families*, and (in addition to his owls) of all *the birds of prey which belong to our region.*

Quartz crystallized around Lead.

MR. THOMPSON has lately brought from a vein on the northwest side of the Shawangunk Mountain, in Orange

county, (N. Y.) an entire crystal of quartz, containing a portion of galena, within it. The crystal is a six-sided column, tapering away at the ends into hexagonal pyramids, making a polygon of eighteen sides. It is about an inch long; and the sulphuret of lead, which is visible through its transparency, is very beautiful. The mountain thereabout is quartz. Mill-stones have been often manufactured from it, which grind maize and rye very well; but want the arid roughness requisite to convert wheat into the best kind of meal. Near the spot where the crystal was picked up, there are veins and fissures filled with the same metallic matter.

Steell on the virtues of Purple Foxglove.

THOMAS EDWARD STEELL has printed the inaugural dissertation, which he defended on the 14th May, 1811, publicly, on being admitted to his doctor's degree. The subject is the *Digitalis purpurea, and its use in the cure of certain diseases.* He views it as a remedy that will reduce febrile excitement, and is dangerous in the debility of convalescents. For though it at first increases the number of arterial pulsations, it afterwards diminishes them in a greater ratio than the increase, according to the time. Indeed, he endeavours to prove by experimental trial and practical illustration, two great points in the employment of foxglove: first, that it has a sudden effect in elevating the pulse, but that the depression which follows may have a greater effect—secondly, that its use may be extended to all diseases, where there is a strong febrile excitement, and where the pulse requires reduction in the numbers of its pulsations, or in tension or hardness.

Having laid down these principles, Mr. S. proceeds to show how they apply to diseases, particularly to pneumonia, rheumatism, hæmoptysis, consumption, hydrocephalus, hydrothorax, anasarca, and ascites; and then concludes a well-written academic exercise, by practical cases, adduced to verify the doctrines he has espoused.

Beck's Memoir on Insanity.

THIS is the written performance on which THEODORIC ROMEYN BECK was publicly examined at the graduation, on the 14th of May, 1811, when a candidate for preferment to the medical doctorate. Having chosen *Insanity* for the subject of his inaugural dissertation, he arranges the faculties and powers of the mind under two heads, the UNDERSTANDING and the WILL. To the former he assigns *perception*, *memory*, *judgment*, *reason*, *imagination*, *attention*, *abstraction*, *and conception*. To the latter he refers the *passions* and *affections*. Each of these faculties is liable to morbid action. Several may be disordered at the same time; and thus may arise partial or general madness, or idiocy.

After having given a succinct account of the history and symptoms, Mr. B. examines the remote causes of insanity, as they act chiefly upon the *body* or the *mind*, and shews how little derangement of the brain has been found by dissection.

He next discourses on the moral management of lunatics; on the mode of securing the public from mischief, during their ravings, and on the proper course of treatment to be observed towards the patients themselves. As to the use of what may be strictly called remedies, he thinks, that in modern times, there have been very few important improvements made upon the knowledge of our remote predecessors.

To this sensible dissertation, Mr. B. had subjoined an appendix, containing abstracts of intelligence concerning the lunatic hospitals of St. Luke and Bethlem, in London; of the insane asylums of Bicêtre, Charenton, and Salpetriére, in Paris; of the receptacles for mad-men in Vienna and Berlin; and of the provision made for the same unfortunate class of persons, in Spain and Switzerland. He concludes his dissertation with a summary of the maniacs which have been received into the hospital and asylum at New-York, from 1804 to 1810, inclusive. Of this superb establishment, which was opened in June, 1808, and of which Dr. A. Bruce is the physician, we gave an ample description in our Vol. 11th, p. 416-418. It appears that during 1810, this asylum had contained 135 lunatics, of whom 86 were males and 49 females. Forty-four had been cured; 10 had

died by suicide and otherwise; 23 had been discharged for various causes, and 58 remained under treatment.

Large mass of malleable Iron.

THERE is now in New-York, an irregular lump of iron, weighing upwards of 3,000 lbs. and supposed to be native. It was brought hence from New-Orleans, and is reported to have been transported from some place situated up the Red River, in Louisiana. It is quite amorphous; and its surface abounds with projections and depressions. The persons who brought it from its former situation were persuaded that it contained platina. Its greatest length exceeds three feet, and its greatest breadth amounts almost to two feet and an half. There is not the least appearance of its having undergone the operation of the artificial furnace. And if it is of meteoric or atmospheric origin, it is a very extraordinary production.

Native iron has been found in masses or rocks in Senegal. Specimens have been discovered in Sweden and Corsica, in Saxony, Bohemia, and the duchy of Juliers. It generally exists in grains or irregular masses. The great Siberian mass weighed sixteen hundred Russian pounds, and is of the quality called *Red Short*, being malleable while cold, but brittle when red-hot. The mass at Otumpa in Peru, is reputed to weigh about fifteen tons.

Extraordinary Crystal of Quartz.

MOUNT St. Gothard furnishes rock-crystal more abundantly than any place in Europe. In 1719, pieces of it were found near Grimselberg, in Switzerland, of a pure and faultless quality, some of which weighed five hundred pounds, and others eight hundred pounds. They were valued at more than thirty thousand crowns. Madagascar has also furnished pieces six feet long, four feet broad and as many thick. The mine at Fishback in the Vallais, now furnishes the largest and most perfect rock-crystals. A peculiarly magnificent piece was once discovered. It is a column or shaft, of

the weight of twelve quintals, it is seven feet in circumference, and two feet and an half in height.

Lewis Pintard, Esq. brought with him lately from Rio-Janeiro, in Brazil, several rock-crystals of large size. The heaviest of these weighs upwards of two hundred pounds. It consists of a column of six sides and six angles, ending in a hexagonal pyramid. The figure of this huge crystal is rather unequal, and in its inside, flaws are distinguishable. This admirable production has been deposited for the inspection of naturalists and all other curious persons, in Scudder's museum.

Penman on the use of Stramonium in Asthma.

AN essay in the London Monthly Magazine for June, 1810, under the signature of *Verax*, earnestly recommending stramonium as an infallible *palliative* for asthma, induced me to make inquiries regarding it.

I found Verax to be Mr Joseph Sills, a merchant of eminence *here;* he had been many years a *martyr* to asthma, and it had been recommended to him by Mr. John Toulmin, a respectable apothecary at Hackney, who had also long been a sufferer from the disorder. They both, in the most candid and liberal manner, afforded me every information I wished, and the means of making the happy experiment.

The stramonium, (datura stramonium) or black thorn-apple, an account of which will be found in the Encyclopedia Britannica, and the London and Edinburgh Dispensaries, grows wild in this country, about old houses, barns, dunghills, &c. It is also common in America, where, I am told, it is called the James-town weed; it may be cultivated as cucumber, and is very hardy; taken up in October, well dried, the root and lower limb smoked, the smoke and saliva inhaled and swallowed, proves a *certain palliative* of the severest paroxysm of asthma: should one pipe fail, continue, and it will *infallibly* abate. There is no danger in smoking, (a child may do it) though, in other respects, it is said to be a violent poison. I have presumed to call it stramonium *benedictum*.

ED. PENMAN.

London, 1st September, 1810.

New work on the natural history of Birds.

MR. POUDENX, late of Paris, left New-York a few weeks ago (June, 1811) on his way to Laguira and Caraccas. While here, he attended the public lectures on mineralogy and natural history, at their respective places of delivery. And he rendered himself exceedingly interesting to Messrs. Pascalis, Bruce, and the other gentlemen who had the satisfaction of conversing with him, by the minute and extensive information he gave of the present state of the physical sciences in Europe. He has attended in a more especial manner to Ornithology; and has already finished the descriptions of fifteen hundred species of birds. His arrangement, we understand, will differ from that of Pennant, Latham, and all his predecessors; and be founded, partly upon their anatomical structure and organization, and partly upon their living habits and manners. In executing this second part of his classification, he proposes to abolish *genera*, which are arbitrary inventions of the human mind, and establish *families*, which are natural assemblages of individuals.

This ardent and enterprising naturalist purposes to penetrate the interior provinces of South-America, and examine the whole face of nature with an exploring eye. We hope his design may be countenanced by the governments. A man so admirably prepared and qualified to travel, can accomplish great things, during a tour of observation through a country. And if he succeeds in his object, important additions may be expected to the existing stock of scientific knowledge.

Dufief's new Dictionary of the French and English Languages.

OF Mr. Dufief's work on the readiest and most natural method of acquiring a language, we made early and respectful mention in our Vol. 8, p. 422-424. It now appears, that since that publication was made, he has employed a portion of his time in compiling a *New and Universal Dictionary of the French and English Languages*, which was printed in 1810, by F. & G. Palmer, at Philadelphia. This

elaborate performance occupies three compact and ample octavo volumes; whose pages are impressed with small, but neat types, and charged with a full measure of information. The first volume contains, 1. The words generally used in French conversation and composition, with definitions in English, and a copious selection of the phrases used in discourse; of the proverbs with which the tongue abounds, and occasional critical and grammatical observations. 2. An extensive collection of the technical terms in the various arts, sciences, trades and manufactures. 3. The names and terms introduced during the French revolution. 4. An enumeration of the different sects and factions that arose during that eventful period, and 5. The pronunciation, according to the most polite and approved usages.

The second volume contains the English words, with their French definitions, and the pronunciation of each, according to Walker's orthöepy, with a treatise on English particles; a list of verbs followed by particles, so frequent in English; an essay on English poetry; and critical observations, interspersed throughout, on the genius of the language.

The third volume is a very curious and useful collection of words, phrases, and their signification. 1. In naval business and sea-faring life; 2. In the several branches of merchandize, trade and manufactures; 3. In monied concerns; 4. In the circulating coins; both reduced from their respective currencies into our own; 5. Tables of the new weights and measures of France, with their corresponding values in the weights and measures employed among ourselves; 6. A collection of French words possessing the same sounds, but differing in signification and spelling; 7 & 8. Two dictionaries of words, deemed synonymous, with their nice distinctions and differences, carefully noted; 9. The difficulties of the French language alphabetically arranged; 10. A valuable dissertation on French poetry; 11. The like on punctuation; 12. An alphabetical list of the names which occur in mythology generally; 13. A catalogue of the persons of prominent fame in past times; 14. A geographical dictionary; 15. A collection of such Latin sentences and quotations as most frequently occur in writing and in discourse; 16. A table of remarkable occurrences, observations, and facts, chronologically arranged from the era of history, 4,004 *years before Christ*, to the time of publication in

1810; 17. The decimal calendar adopted in France during the revolution, and universally employed by the French until January 1, 1806.

The reader, from this epitome of the contents, will readily appreciate the value of these volumes for the man of business and the politician, as well as for the belles-lettres student, and the polite scholar.

A disease in Ohio, ascribed to some deleterious quality in the Milk of Cows.

FOR several years past the inhabitants of some portions of Miami, Montgomery, and Green counties, have been annually visited by a singular disease, denominated from its principal symptoms the '*Sick-stomach.*' In the spring of 1809, a short history of this malady was published in Cincinnati, from which it appeared, manifestly to be a new disease, the remote cause of which was then unknown. Since that time, several occurrences have been noted, and experiments made, which go far towards developing the cause. It had been *conjectured* by many, that this affection depended on poisoned milk; but nothing could be collected to support the supposition, till the preceding summer, when such a mass of evidence presented itself, as leaves but little doubt of the correctness of the opinion. The facts alluded to, have been furnished by Mr. Alexander Telford, and Mr. Arthur Stewart; both of whom, from several years residence in Miami county, have had ample opportunities of observation.

1. The former of these gentlemen relates, that in the preceding summer, he and his family were attacked by this disease at the usual time, and with its usual violence; that after suffering for some time, he determined to cease using milk and butter; and that, although more violently affected than any of his family, he soon became much better than either of them—That his family at length were too much indisposed to milk the cows, four in number, and the calves were suffered to take *all* the milk, the consequence of which was, that the whole of them, although previously healthy, died in one week. His family then omitted the use of milk, and began to mend. The cows were put into cultivated pasture, and after some weeks, the family resumed the use of

milk with impunity. They were all restored this fall, two months earlier than usual. One of his neighbours pursued a similar plan with similar success.

2. Both of these gentlemen observed a part of their children to vomit after eating milk, throughout the whole summer; and those children unequivocally suffered less than the rest. They did not vomit after taking any other kind of food. Mr. Stewart kept one of his cows for some time upon artificial pasture, and her milk ceased to produce that effect on his children.

3. Mr. Stewart knew two young men in the same house, one of whom ate milk freely, and suffered greatly with the disease: the other refused to eat it altogether, and remained in perfect health.

4. Neither of these gentlemen have at any time seen the disease attack a person who refrained entirely from milk and its preparations.

5. Cows which afford milk are generally exempt from the disease, even in situations highly destructive to those which do not.

6. The milk of the cow in the summer time is said to possess a singular taste and smell.

7. It is a notorious fact, that horses which are not suffered to range in the woods are exempt from this disease. Mr. Telford lost by this complaint 14 head of horses; he had two left, which he took wholly from the woods, two years ago, and they have been in perfect health ever since.

8. It is confidently asserted, that dogs are never attacked with this disease but after feeding on the carcase of an animal which had died with the same complaint; and that feeding in this way is almost invariably fatal.

9. It may be remarked, that there is nothing in the symptoms or effects of this disease to warrant the opinion of its depending on the same cause with the other endemic diseases of this country. The absence of regular chills, and its never producing either disorders of the liver, or dropsical affections of any kind, establish a line of clear discrimination between it and remitting and intermitting fevers, while its principal phenomena, are such, as we should before hand expect to be produced, by a poison received into, and exerting almost its whole effect on the stomach.

These facts have been stated at length, that the inhabitants of the tracts where the disease prevails, may, the en-

suing summer, make such experiments as will decide the question. Should the present opinion be confirmed, the discovery may be regarded as one of considerable importance. It will at least rob the disease of half its terrors, and render it no longer a stumbling block to emigration. It will point out a certain means of prevention, and inspire a well-grounded expectation of a total extinction of the malady in a few years. It would be an object of great curiosity, and probably of *utility* also, to discover the plant which possesses such active qualities. *One* of the modes in which this enquiry might be conducted, is an examination of the contents of the stomachs of those animals which die suddenly. Should such a discovery be made, it is hoped that a specimen of the plant, with any information that may be collected concerning it, will be put into the hands of a proper person, that physicians and botanists generally, may become acquainted with it. *Liberty Hall.*

Surprising extrication of Inflammable Air.

NEAR one of the sources of Licking River, in Kentucky, there is a great separation of Phlogistous gas, from something in the interior strata of the earth, in a greater quantity than is known perhaps in any other part of the world. This light fluid is discharged through the atmosphere. It bubbles incessantly through the muddy pool, about two rods in diameter. The gas readily takes flame on burning gunpowder in it, or by the approach of any blazing body. The volume of it is so great, that a man who approached near enough to snap a pistol in it, which he held in his hand, was suddenly enveloped in flame, and sorely singed, before he could make his escape. When set on fire, it burns with remarkable splendour and vehemence, not only for hours, but days and weeks in succession, mounting to the height of ten or twelve feet, or more. The relator of this was one of a party that visited the place, in an excursion through the woods. He discovered, after the inflammable air had been on fire for six or eight hours, the water of the pond was heated to an uncommon degree, and emitted copious exhalations; and the ebullition at the spot through which the air ascended was more vehement.

It was judged that if the flame had been continued, the water would have been made to boil, and all have been evaporated, and the surrounding space would have been heated and dried. And lastly, there was reason to suppose that the succulent and carbonic matter in the bottom of the pond would have been put into a state of combustion. From the crater, at the place through which the gas rose, and the lowness of the surrounding ground, it appeared as if this had really happened on some former occasion; and for fear the like might occur again, the gentlemen of the party extinguished the blaze. There seems to be no end to its burning; but a storm of wind and rain may put it out.

Tennessee Repos.

James's history of the Herculean Straits.

ONE of the persons whose literary and scientific memory we cherish with respect, is lieut. col. Thomas James. He commanded the royal regiment of artillery at New-York, long before the revolution; and had resided in Gibraltar six years, from 1749 to 1755. While on that station, he compiled the materials for his "History of the Herculean Straits, now called the Straits of Gibraltar; including the parts of Spain and Barbary lying contiguous thereto:" and these materials he appears to have afterwards digested into the form of a large work, published at London, in 1771, in two volumes quarto. The dedication, to col. Maitland, is dated Vaux-Hall, New-York, June 13, 1768; and in p. 179 of the 1st volume, the author records an occurrence which we copy for the sake of shewing the destructive effects of civil broils, upon historical compositions: "When I travelled in "Spain," col. James writes, "with col. Denny, late gover- "nor of Pennsylvania, I drew a plan of the Alhambra, and "particularly described that castle, palace, and city; but "unluckily those descriptions, plans, &c. with many manu- "scripts, maps, views, antiquities, and a choice library, "chiefly collected for my Phœnician history, were burned on "the first day of November, one thousand seven hundred "and sixty-five, with all the apparel of my family, and the "whole furniture of my house, commonly called Vaux- "Hall, by the inhabitants of New-York, on account of the "stamp-act."

This is a work of much erudition. The author ascribes the early settlements, on both sides of the Straits, to the Phœnicians. From these, the Carthaginians descended; and they both navigated into the Atlantic Ocean, and established many colonies in different places. It was under the conduct of Tyrian pilots, that Solomon's ships sailed to Ophir and Tarshish, from the ports of Ailath and Ezion-geber. Ophir, was the general name of the eastern ports of Africa, and Tarshish of the western coast, both of Africa and Europe. It is established, beyond a doubt, that the Cape of Good Hope had been circumnavigated in those early days; and that the Portuguese were not the first who doubled that formidable promontory.

The question is minutely examined, whether the current of the Strait, between Capes Trafalgar and Spartel, on the W. and Points Europa and Ceuta on the E. always runs from the Atlantic into the Mediterranean, or sometimes in a contrary course? And as far as we can comprehend the subject, the influx from the Atlantic generally prevails; though there is reason to believe, a stream from the Mediterranean occasionally sets to the westward, along the Barbary and Spanish shores. The chart prefixed to the first volume contains a delineation of the coasts and of the supposed tides and currents in the passage betwixt them. The work is embellished with fine maps and views of Tangier, Cadiz, Ceuta, and Gibraltar. It bears strong and frequent marks of a classical and antiquarian taste; and he who desires to trace the history of this remarkable region, from the time of the Tyrian Hercules, who erected pillars near those supposed extremities of the earth, through the succession of Carthaginian, Roman, Gothic, Vandalic, Moorish, Portuguese, Castilian, and English sovereigns, up to the Spanish kings who ruled over the new world discovered beyond them, will find great relief to his curiosity, by perusing this publication of Colonel James.

Submarine Volcano in the Azores.

A LETTER from Mr. THOMAS HICKLING, to J. B. DABNEY, Esq. contains the following curious information:

ST. MICHAELS, Feb. 28, 1811.

DEAR SIR—On the 29th, 30th, and 31st ult. we were much alarmed by the frequent shocks of earthquakes—say

upwards of twenty; and on the 1st inst. information was received here that a volcano had broken out *in the sea*, five leagues west of this port, and half a league from the land, in fifty or sixty, and some fisherman say in seventy or eighty fathoms of water. I repaired immediately to that part of the island, and to my utter astonishment, saw a vast column of black smoke issuing out of the ocean. The wind was a gale from the southward, and blew the smoke over the land. The sea was excessively agitated, and the surf on the shore was frightful. I was assured by the peasants, that the preceding night, fire had been emitted; and being curious to ascertain that fact, I returned to the city, and desired my son and son-in-law to go and tarry opposite the volcano all night—They did so; and saw at various times, during the night, fire issue forth like a number of rockets, discharged together. Large masses of stone, or lava, were continually thrown above the surface of the sea. Wonderful, indeed, how fire could pierce such a vast body of water, yet such was actually the case. In eight days it entirely subsided, *leaving a shoal on which the sea breaks.*—What a happy deliverance for us! for had this formidable volcano opened on the land, it would probably have gone near to ruin this fine island.

Mr. Andrew Adam, of St. Michael's, wrote thus to his brother in London, dated Feb. 17, 1811.

"ON the 26th, 27th, and 28th of January, this island "again experienced a repetition of several very severe "shocks of an earthquake, without, however, doing any "damage or cost of lives, only dreadfully alarming the in- "habitants. On the 31st, a most awful and tremendous ex- "plosion of smoke and flame issued from the watery element, "at the distance of half a league, or two English miles from "the shore, in the western direction of our island, which "struck the inmates of the contiguous villages and hamlets "with dismay and consternation; yet, thank God, has not "hitherto been followed by bad consequences. The scene "was awful beyond all description, and from the bowels of "the inflammatory substance, forming its passage upwards "of thirty fathoms deep in the ocean, issued smoke, fire, "cinders, ashes, and stones of an immense size. Innume- "rable quantities of different kinds of fish, some nearly "roasted, and others as if boiled, floating on the surface

" of the sea towards the shore. This dreadful eruption of " fire, has perhaps been the saving of the island and its in- " habitants. The fire has now materially subsided, but " our anxiety still continues."

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Capt. Farwell, arrived at Boston, on Friday, from St. Ubes: when off the west end of the island of St. Michael's, on the 18th of June, 1811, at 10 o'clock, A. M. passed to leeward within 4 or 5 miles of a great smoke rising out of the sea, and throwing up large columns of water to a great distance, attended with flashes of fire. He saw similar flashes the night before, at the distance of 50 miles. The water appeared very coloured, and filled with dead fish.

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The ship Otis, Capt. Thomas, left Lisbon on the 6th of June, and sailed direct for New-York. The following extract from her log-book, shows that the strata under the bottom of the sea, were in violent commotion by heat.

" Monday, 17th June, 1811, at 4, P. M. at the west end " of the island of St. Michael's, and about a league from " the land, we saw a volcano casting up from the sea large " columns of black smoke and fire, some hundred feet in the " air. At 8, P. M. the west end of St. Michael's bore " S. S. E. 6 or 7 leagues."

Capt. Thomas stated to Dr. Mitchill, that he saw the light of the eruption for nearly twenty-four hours. The discharge of inflammable air and carbonic matter was not constant, but intermitting. The intervals were five minutes and more. During the whole run, along the north side of St. Michael's to the west end, and thence westward, towards Pico, as long as the smoke and flame were visible, the sea was remarkably calm and the weather unusually fine. Capt. Thomas, when he first saw the smoke, at a great distance in the horizon, was naturally enough led to believe, that it proceeded from a combat between two vessels. On approaching somewhat nearer, it seemed so much more considerable, that he supposed there must be an action between two hostile fleets. But on advancing close enough to examine, he satisfied himself that the vapour and blaze proceeded directly from the ocean. He spoke an English armed brig, that had for a considerable time been stationed at St. Michael's, and whose commander had sounded not a great while before, the very spot whence the exhalations proceed-

ed. The depth at that place was from seventy to eighty fathoms. Part of the vapour was very black and dense, and seemed almost immediately to fall back upon the waves; and the rest was lighter, in weight and colour, and ascended into the atmosphere. A bluish cloud overhung the region for a wide space. (For the particular account of the volcanic eruption at St. George's island, in 1808, see our volume 12, p. 254.)

Mr. Henry Neil, who came to New-York in the same vessel, agreed substantially to every part of the foregoing statement; and says, he witnessed with great surprize the indications of such a violent submarine commotion. When the inflammable air took fire, he heard a sort of hissing or roaring noise, which however was not very loud, nor capable of being distinguished far. The longest intermission between the volleys, he thought, did not exceed twenty minutes.

University Graduates in Physic, at New-York.

ON the first Tuesday in May, 1811, the following candidates were admitted to the Doctorate, after having passed through the regular course of education in the College of Physicians, and performed their respective tasks and exercises: to wit.

Theodoric Romeyn Beck, A. M. of Schenectady, who defended his Dissertation, "On Insanity."

William E. Burrell, A. B. of New-York, "On Bubonocele."

Gerardus A. Cooper, of New-York, "On Worms in the Intestines."

Caspar Wistar Eddy, of New-York, "On the Analogy between the Animal and Vegetable Structure."

John W. Francis, A. B. of New-York, "On Mercury."

Henry Ravenel, of South-Carolina, "On Trismus Nascentium."

Thomas Edward Steell, A. M. of New-Jersey, "On Digitalis Purpurea."

Samuel Armstrong Walsh, A. B. of New-York, "On the Origin and Nature of Yellow Fever."

Annual Address of the Medical College in the University of New-York.

THE several courses of Instruction will commence, as

usual, in this Institution, on the first Monday in November. The Session will be opened by an Address from the President.

Since the last winter, important additions have been made to the Chemical Apparatus, a Laboratory has been built, and the Chemical Lecture-Room has been so altered, as perfectly to accommodate the Students attending Dr. Mac Neven, the Professor of that Science.

Such provision has been made by law for the Anatomical Department, that Dr. Smith, the Professor of Anatomy, will give a complete course of Demonstrations, and will also illustrate his Surgical Lectures, by performing all the operations, practicable upon the healthy subject, in the presence of his class.

Dr. Hosack will Lecture on the Theory and Practice of Medicine; and a full and complete course will also be given on Obstetrics, and the Diseases of Women and Children.

The above series of Lectures constitute the Winter Session; the Spring Term, which commences on the third Monday in April, consists of Lectures on Natural History, and on Botany; the former by Dr. Mitchill, the latter by Dr. Hosack.

The Lectures on Natural History are illustrated by a large collection of Mineralogical and Geological Specimens; and an elegant Museum, to which the Students can have access, affords every facility for the acquisition of zoological knowledge.

The Botanic Garden having been purchased by the State, and placed under the direction of the College, the Students of Botany will have an opportunity of visiting that establishment whenever they think proper, and of examining the many rare and valuable plants which it contains.

The various courses of Instruction delivered in the College, are so arranged, as to form a complete System of Medical Education; and the Trustees and Professors confidently promise, that no exertion on their part shall be wanting to fulfil the just expectations and liberal views of their Patrons, the Legislature and the Regents.

The Professors are bound to examine all Applicants for Degrees, and to report to the Regents such as they approve, on or before the first day of March in every year. The Diplomas are then granted, and the Degrees are conferred in this City, on the first Tuesday in May, the Candidate hav-

ing previously delivered to the Professors, and defended at a public Examination, a Thesis on some subject connected with Medicine. The Thesis may be printed at the discretion of the Graduate, with the approbation of three of the Professors.

By order of the College,
SAMUEL BARD, M. D. President,
JOHN W. FRANCIS, M. D. Register.

Improved American edition of Brewster's Encyclopædia.

Messrs. PARKER & DELAPLAINE, promise the public an edition of the Scottish Dictionary of Arts, Literature and Science, by D. Brewster, LL. D. It is the design of the learned editor and his assistants, not merely to render the work a repository of new inventions and discoveries, but to enrich it with original views in the various departments of philosophy and the arts. It also deserves to be mentioned, that whenever articles are unavoidably abridged, the defect will be supplied, and the researches of the inquirer directed and extended by copious references to the best works, both foreign and domestic. From all that appears of the work, these engagements to the public seem to have been punctually fulfilled: and it is the intention of the American publishers to increase its utility and importance, by adding to it a number of cis-Atlantic improvements in the Arts, Zoology, Botany, Mineralogy, Medicine, Geology, Geography, Navigation, and Agriculture; as well as the Biography of our deceased worthies; and a correct delineation of our History, Constitution and Laws, increase of Territory, Commerce, Population, Manufactures and Resources, which will add greatly to its value, beyond the European original.

Flight of Gossamer, at New-York.

ON the 27th, 28th, 29th, and 30th Sept. 1810, the people of New-York city were amused by the appearance of white plumes floating in the atmosphere. They generally

seemed to descend, or be borne along like the pappus of seeds. They were by some believed to be the arillus of the silk weed-seeds: and other conjectures were formed about them. As they descended, they somewhat resembled feathers, or snow-flakes; but some of them were several yards in length, having the appearance of strings or threads, wafted through the air. On examining them after they had alighted, they seemed to be of a silky constitution, having a greater resemblance to white and glossy raw silk, or to tough spider-webs than to any other substance. The flocks or masses frequently contained insects; but as these were of different species, and were entangled in the fiilaments, it is presumable these creatures were not the formers of the material, but were caught in it accidentally, in their flights, during its descent, as insects are wont to be arrested by cobwebs.

FOREIGN.

Opinions and Speculations of Dr. Davy.

THE opinions advanced by Dr. Davy, during the present lectures at the Royal Institution, relating to combustion, and the nature of heat and light, vary so much from the received doctrines, and are so interesting and important, that we shall here endeavour to give an abstract of them from his different lectures.

Combustion, according to these new doctrines, is not the result of the combination of oxygen with other bodies, by which the oxygen is condensed, and the light and heat given out, as the French chemists assert; nor are heat and light specific substances, differing from other matter. All bodies which have a strong chemical affinity or attraction for each other, are found to possess two different states of electricity. Thus, acids are negative, and the alkalies positive. Zinc and mercury, and other metals which possess strong chemical affinities, are also in different states of electricity. This difference in the natural states of electricity, Dr. Davy considered as the cause of chemical affinity. Combustion is the effect of chemical action. In such bodies as combine rapidly together,

the particles are violently agitated; and, being separated from each other by their polar repulsions, are thrown off in straight lines through free space, and become radiant heat and light. According to Dr. Davy, the particles of all bodies possess polarity. With many bodies oxygen has a most powerful affinity, and combines with great rapidity; and, during this violent chemical action, much light and heat are produced. Some of the French chemists have asserted, that oxygen is the only support of combustion, and that the light and heat given out comes from the oxygen alone. But light and heat are produced in a variety of instances without the presence of oxygen. Indeed, in all cases where bodies rapidly combine, the phenomena of combustion takes place. —The new metal potassium, or the metal of potass, was placed in a glass vessel filled with carbonic acid gas; by the heat of a spirit lamp applied to the glass, the metal inflamed in this gas, and gave out a brilliant light. Charcoal was deposited on the side of the glass. In this experiment, it may be said, that the oxygen of the carbonic acid combined with the potassium; but it ought to be recollected, that this oxygen had given out its light and heat, according to Lavoisier, when it combined with charcoal to form carbonic gas. It ought not, therefore, to give out a second time what it had before lost.—In another experiment, potassium and arsenic were placed in a close retort, containing nitrogen gas; by the heat of the spirit lamp they combined rapidly, and, during their combination, much light and heat were produced. Here, if the experiment was properly made, no oxygen was present.—Metals also inflame spontaneously in chlorine gas, (improperly called oxymuriatic acid gas.) This gas, Dr. Davy stated, was a simple uncompounded substance, containing no oxygen. His experiments on this subject we shall afterwards mention. Heat is radiated from the surfaces of all bodies, but in different degrees, according to their nature and colour. Black surfaces absorb and also emit radiant heat more rapidly than others. If a polished surface of metal, and an equal surface of charcoal, be heated to the same degree, and a thermometer be placed at the same distance from each, the charcoal will raise the thermometer more rapidly than the polished metal. This radiation of heat Mr. Leslie had attributed to certain aërial pulsations. Dr. Davy stated, this could not be the case, for heat was more powerfully radiated in vacuo than in the open

air. He placed a platina wire in vacuo, and a thermometer at a certain distance from it; the wire was then ignited by means of the voltaic pile; the effect on the thermometer was greater and more rapid than when the same experiment was repeated in the air. All the metals are fused more rapidly in vacuo than in the open air, when acted upon by the voltaic pile, and give out a more intense degree of heat and light. Charcoal, in the same circumstances, ignites with a most brilliant light; and this light may be continued for any length of time, without any change or decomposition of the charcoal. The light and heat, in these experiments, cannot proceed from combinations of oxygen, but may be supposed to originate from the vibrations or violence of action of the particles of the bodies which are thus operated upon. This opinion was also adopted by Hooke and Boyle. The experiments of Dr. Herschel had shewn, that the sun constantly emitted invisible rays, (distinct from light) which produce heat; other invisible rays are also emitted, which have the property of reviving metallic calces. The one he calls, heat making rays, the other, deoxydizing rays. Dr. Davy's opinions respecting light, and other rays emitted from the sun, imply, that he does not believe any of those phenomena will admit of an explanation by the pulsations of an ethereal medium. His observations lead to the supposition, that the particles of light and of other bodies possess polarity.—If a magnet be broken into any given number of parts, each part has its attracting and repelling poles, like the large magnet. If a blunt insulated metallic conductor be brought near an excited glass cylinder, it acquires electrical polarity; the one end is positive and the other negative. If the tourmaline (a crystal from Ceylon) be heated, one end of the crystal becomes positively electrified, and the other negatively. If the crystal be broken into a number of parts, each part has the same form as the large crystal; and each of these small crystals has its attracting and repelling electrical poles. Here, some connection between magnetism, electricity, and crystallization may be traced. Crystallization is the effect of chemical affinity, by which the particles arrange themselves in certain forms, according to the shape of the primary molecule, and, probably, by some law, connected with the polarity of each particle. Light appears also to be refracted according to some law connected with its own polarity and that of the refracting medium. The double refraction of light, in passing

through Iceland crystal, always takes place on the plane, in a line with the axis of crystal; and if the crystal be broken into smaller ones, each of these has the same property of double refraction in the direction of its axis. When the light falls upon the crystal with a certain angle of incidence, only one refraction takes place; in another angle, there are four refractions, or images of the object seen. Dr. Davy was inclined to believe, that each particle of light had its polar axis, and attracting and repelling poles, and that its refractions and reflections were dependent on this polarity. It is only justice to Dr. Davy to mention, that what he advanced on this intricate subject, he stated to be, in a considerable degree, hypothetical, and entitled to no more regard than what it might derive from future experiments. We have been more particular in stating these conjectures, as they appear to offer the most plausible solution of what are called, the fits of easy transmission and reflection of light hitherto given.—The positive and negative electricities natural to different bodies, makes their decomposition by electrical agency practicable, in cases where they could be decomposed by no other known methods. Hence, the voltaic pile, or battery, becomes the most powerful instrument in the hands of the chemist. The French philosophers have lately published an account of some experiments made to determine the powers of different piles; and have asserted, that the energy of each pile is in the proportion of the cube root of the number of plates. In order to produce a double effect, they state, that the number of plates must be increased eight times. Dr. Davy, on the contrary, found the energy of the battery to increase in a much greater ratio with the number of plates. Ten plates of metal, eleven inches and a half in length, and four and a half in breadth, ignited an iron wire two inches in length. Twenty plates ignited eight inches, and thirty plates ignited twelve inches of the same wire. The error in the calculations of the French, is attributed to their making use of piles instead of troughs, by which means a considerable part of the effect is lost. The battery at the Royal Institution consists of troughs made of Wedgwood's ware, divided into separate cells, filled with water, containing a small portion of nitric acid. The plates are suspended from a piece of wood, the length of the trough, by which means they can all be immerged in the cells, or taken out, together. When a very powerful battery is wanted, a num-

ber of these troughs are connected. All the metals are fused by it, but more readily in vacuo than in the air. Platina, which is the most infusible metal by other means, melts, by the operation of the voltaic body, sooner than zinc. During the fusion of platina wire in vacuo, a number of vivid sparks were given out, which Dr. Davy imagined proceeded from the disengagement of hydrogen, which forms a constituent part of carbon and the metals. In regard to meteoric stones he observes, that hydrogen gas, or inflammable air, will dissolve some of the metals, and form with them, an invisible metallic gas. When this gas is exploded, the metals are deposited in a metallic form on the sides of the vessel in which the experiment is made.* Arsenic, tellurium, and sodium, were exhibited, in a gaseous state, combined with hydrogen. When the hydrogen was inflamed, by a mixture of oxymuriatic gas, the metals were deposited in a solid form, coating the sides of the vessels. Dr. Davy observes, that the stones which had fallen from the atmosphere were all metallic, and might, perhaps, be formed by the explosion of a large quantity of inflammable air, in which the metals had been dissolved. He was, however, inclined to trace their origin to another cause, and to consider them as the ruins of some planetary body; or, perhaps, they might be small satellites, moving round some of the planets, which, coming near the orbit of the earth, were attracted to it. We know that this opinion has been advanced by some philosophers on the continent; but it appears so improbable, and contrary to the order and perfection of the solar system, that we think it totally inadmissible. The opinion that they are metals in a gaseous form, which explode and condense, is, we conceive, not only more probable in itself, but more agreeable to the appearances which accompany the fall of these stones. The dense cloud, the loud explosion, the brilliant light, which precedes their fall, the heat of the stones when they are first found, are all indications of their atmospheric production. Dr. Davy lately read an account of a meteoric stone, which fell, a few weeks since, in the county of Tipperary. The phenomena attending its fall were the same as described in other instances of the like kind. The stone has been analyzed by Mr. Higgins, of Dublin, and contains, like other meteoric stones, iron and nickel. *London Monthly Magazine.*

* This is an elegant confirmation of the doctrine on the formation of atmospheric ſtones, taught by Profeſſor Mitchill in 1809; and publiſhed in the ſyllabus of his courſe of Natural Hiſtory. (See Med. Rep. vol. 13, p. 262-263.)